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BU

ATHENAEUM OF PHILADELPHIA

BUILDERS NATIONAL CATALOG

HOME BUILDER ERS CATALOG

FIFTH ANNUAL EDITION

AND DATA ON MATERIALS SMALL HOMES AND GARAGES OF HOME CONSTRUCTION S ANALYZING THE PROBLEMS AND EQUIPMENT \ ARTICLES MANUFACTURERS' CATALOGS BUILDERS S CONTAINING MATERIAL A REFERENCE WORK FOR ILLUSTRATIONS AND PLANS OF CONTRACTORS, BUILDING DEALERS AND

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NATIONAL BUILDERS CATALOG

INTRODUCTION

TATIONAL BUILDERS CATALOG is primarily a handbook and reference work for the use of the contractor and building material dealer when logs published together in this one volume prove invaluable for they can never be catalogs thus making needed information instantly available. Manufacturers' catamaking purchases and deciding on the use of various materials and equipment. It is a completely indexed and cross indexed filing system of manufacturers' lost nor misplaced and are therefore always at hand. In this edition is an editorial section of informative articles, tables and charts and equipment. A greater understanding of building operations, materials, methods logs are written for the dealer's and contractor's own use they will also be of valuable aid in discussing the various matters treated upon with a prospective covering financing, business relations, and the business problems of building. Immediately following this section are the manufacturers' catalogs of building materials and equipment will result from using these logical presentations. While these cataowner or builder.

about four hundred pages in all. It was found that such a large number of home designs were not required. Therefore in this issue of National Builders Catalog just sixty-four pages are devoted to selected house and garage designs. These were carefully selected from over one thousand designs that have been prepared and sold by Heretofore Home Builders Catalog has carried a large section of small house plans, the Plan Service Department of this publication.

types of homes, garages, farm buildings, etc., may be had. Complete plans, working plan books or from this catalog may be had for a very small sum. They are sold to drawings, specifications and a material check list for any design selected from these The Plan Service Department of NATIONAL BUILDERS CATALOG continues to function as formerly. Plan books containing illustrations of many new and interesting prospective builders through local distributors. The scope of this Catalog has been broadened. The success of the Home Builders field of this publication each year means it will be of ever increasing service value Catalog in the past four years has warranted this expansion of its horizon to include and usefulness to the thousands of building contractors and material dealers who materials that are used in the construction of all types of buildings. Expanding the



INTRODUCTION

Please realize that pages torn or illustrations clipped from this catalog destroy its usefulness. Mutilation in any form should be avoided so that every page may continue to serve its purpose.

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Facts and Figures
That Will Help Get Business

This Book Is

NDY MANUAL

formation regarding his business. This need has been felt more keenly each year as new building materials and items of equipment are added to the thousands that have ITH this revised edition of Home Builders Every builder has long felt the need for a compact reference catalog in which he can quickly find complete data about the building products he uses in his daily work and in-CATALOG, now known as NATIONAL BUILDERS CATALOG, a new and vital working tool is placed in the hands of progressive builders and dealers. already become commonplace.

BUILDERS CATALOG has exceptional value, for it brings to ies, sizes and capacities. To these builders, the National nformation they need about many important building provements and must be able to tell his client why they should be used, how much they will cost and whether or not they can be readily obtained in the required quantihem in a handy reference volume the precise sort of products which they are likely to use in their work.

KEEPING UP WITH THE TIMES

reference material and practical sugges-tions that will help you build a profitable business. For full details see box on opsection of helpful HOW TO USE EACH SECTION Business BOOK that make profits. A reference material and OF THIS Editorial Section-

face the

frequently

architects

der contracts obtained through Builders who work largely un-AN AID TO THE BUILDER

Plan Section—Practical plans of popular houses to help you get business with prospects that do not employ architects. Complete working plans are available. posite page.

with some of these materials. As

a result, the builder must cast

terials mentioned in the architect's

problem of finding unfamiliar ma-

Building supply

specifications.

dealers with whom the contractor works may likewise be unfamiliar about to find the manufacturer's name and address and must wait until catalogs reach him before he

indexes to this book terials specified by architects, owners or help you find data concerning ma-Buyer's Guide-The contractors.

complete information concerning all important types of building materials; where to buy; sizes, weights, models, etc.; speci-Catalog Section-Here you will find fication data and names of nearest repre-

is in a position to complete his

estimates or work out his con-

Inis difficulty has been aggravated to some extent by the fact that architects have long been supplied with compact reference catalogs that keep them strictly

This difficulty has been

struction schedule.

Installation or Use Data—In the manufacturers, catalog pages will be found valuable information concerning the use or installation of building materials and equipment. Study this information before working up estimates on products with which you are not wholly familiar.

tors, becomes a working tool of great practical value.

log of similar character, designed

especially for building contrac-

their logical uses. Clearly, a cata-

up-to-date on new materials and

A WORKING TOOL FOR THE BUILDER

upon to solve problems of design and construction for which the use of customary materials and methods are efforts to jobs ordered directly by owners, have no less When no architect is employed by an owner, the builder or contractor must necessarily perform some of the functions forms all of them. Such a builder must be fully cognizant of the relative merits of various types of building materials and items of building equipment, for he is called Builders who only occasionally work under contracts obtained through architects and who devote most of their normally assigned to the architect; in many cases, he perless effective than newer ways perfected in recent years. need for the National Builders Catalog.

There is not only the need for keeping up-to-date on new products, new models, new methods and new uses for familiar things, but the builder must be in a position to advise as to the relative merits of these modern im-

color and finish; they are the and tenants the up-to-date things that everybody wants and talks convenience or economy. They newest conveniences and coming salability or rentability into his structures. The one infallible rentability is to offer to buyers about. These things are the modern, nationally advertised products that make for home comfort, trends in style, through leases and rentals, has still another need for the Nafaced with the problem of buildway of achieving salability or his time erecting structures for called the speculative builder, who spends part or all of immediate sale or for income merchant builder is constantly The merchant builder, some-TIONAL BUILDERS CATALOG. are the newest

sity for being familiar with ma-terials that he has never had an The merchant builder thus is particularly beset with the neces-

opportunity to use before. He cannot buy these materials

gives him a better building for sale or for rent than he its editorial section, its complete buying information and Furthermore, the merchant builder must achieve salability and rentability with the utmost economy effected in Here again the National Builders Catalog, through its catalog pages with their use data, becomes a working how to use them. He cannot get sufficient data from the new development that lowers construction costs or that blindly, for he must know something of their cost and advertisements he reads; he must have complete buying information and complete data as to cost, how to install his initial investment. He must take advantage of every formerly could erect for the same amount of money and how to merchandise these new features.

tool that is a direct aid toward making better profits. A NECESSITY TO THE DEALER

This book is no less valuable to the building supply dealer to whom the contractor and merchant builder

for BUILDERS and DEALERS

great host of these products are not normally sold through ing supply dealer cannot carry in stock the many thousands of products required in building construction. A material dealers.

Nevertheless, the dealer is the first source to which the busy builder or contractor turns when he seeks to prothe required line, he can often turn the inquiry into a cure some wanted product. If the dealer does not carry

nice profit by knowing where to otherwise the builder would place get the material wanted and by of his builder customers. In this work, the NATIONAL BUILDERS CATALOG is of definite value. It is a buyer's guide, filled from placing the order himself which direct. Even if he made no profit be vastly enhancing the good will cover to cover with practical information that every building mathrough such an effort, he would terial dealer needs.

How TO USE THIS BOOK

LOG is, in a sense, a wholly new tool for the builder and dealer. How this book can be used most effectively by builders and deal-When any new tool comes to hand, the first problem is to learn The National Builders Cata-HOME BUILDERS CATALOG, its character is basically different. how to use it most effectively. While it is an outgrowth of the ers is briefly outlined herewith:

BUSINESS METHODS THAT

mation for Progressive Builders and Practical Reference Data and Infor-MAKE PROFITS

ness—The importance of cultivating relationships with owners, architects, subcontractors, dealers and manufacturers, bankers and realtors.

Successful Methods for Getting Business—How to cultivate the six factors that control your business.

Remodeling and Modernizing for Slack Six Factors That Control Your Busiealers.

Builders Who Can Arrange Financing Get the Cream of the Business-Sources Season Business—Sources of remodeling and modernization work and how to cultivate them.

buildings and modernization.
Salability and Rentability—The Foundation of Building Profits—How to capitalize manufacturers' advertising.

Buying Materials for Maximum Prof-

of money and types of loans for new

ers—Cultivating business with contractors and building owners; creative selling of profitable lines and side lines. Profitable Business Building for Deal-

its-When and how to spend money to

BUSINESS METHODS THAT MAKE PROFITS

Immediately following this page is a section of text and reference material from which every builder, no matgreater profits. Attention is called particularly to the structive suggestions for developing his business toward ter how successful, can get helpful information and confollowing items

of methods used by progressive builders to cultivate profitable business through six types of factors that constitute Successful Methods for Getting Business. A summary the important sources for new contracts.

Remodeling and Modernization for Slack Season Busi-Outlines sources of remodeling and modernization work, and tells how to cultivate them so that dull seasons

The financing of building projects is discussed in the next section which also contains valuable reference charts, tables and financing formula the builder can use in securwill disappear.

and rentability of direct interest in suggesting a new and Merchant builders will find the section on salability

NATIONAL BUILDERS CATALOG

ing funds and computing costs.

come for materials, supplies and often advice. The build- practical pathway towards greater success in marketing their products.

Here will be found some guides to economical buying When to spend money to save money is discussed. which many builders will find new.

section of the text and contains, in condensed form, the Profitable Business Building for Dealers is a separate sum total of many practical experiences in successful business promotion.

THE CATALOG SECTION

if obtained separately, would not only constitute greater bulk than the NATIONAL BUILDERS CATAgathered together in the handiest possible form. These pages are building materials. They are not advertisements at all, but are service data builders require, with dividual catalogs and literature comprised of exactly the sort of Log, but their filing for quick reference would prove to be a real The primary purpose of this book is to place in the hands of densed but complete information about important types of building materials and equipment. The inproduced by these manufacturers, busy builders and dealers conproblem. Here the material extraneous material eliminated. not merely advertisements

tion is followed in all of these catalog sections to aid the builder manufacturers have incorporated their complete reference A uniform method of presentain finding the required information with the least effort. In some instances, however,

BUILDING PLANS FOR PRACTICAL HOUSES the data is modified as circumstances require.

catalogs and, in these cases, the order of presentation of

On pages 305 to 368 will be found pictures of houses years of development and improvement. Complete con-Any desired alterations or changes will be made by the NATIONAL BUILDERS CATALOG Plan Service at a nominal which have proved highly popular and successful after struction drawings, specifications and material lists can be obtained for any of these houses at nominal cost. price that barely covers the actual cost of the work.

INSTALLATION AND USE DATA

to give the builder complete information concerning the use of the products referred to so that he can determine from these pages how to estimate labor costs and prepare Wherever possible the catalog pages have been planned The use information is also designed to be of his time schedules when working with unfamiliar practical help in supervising the work on the job. terials.

The Builder's Key Position in a Construction Project

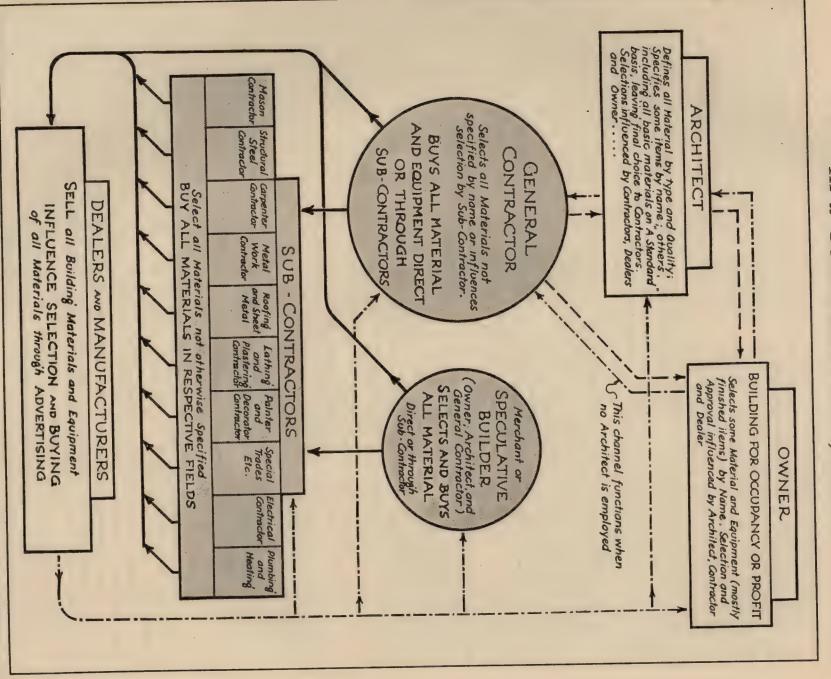


Fig. 1—Builders, whether operating as Contractors, Merchant Builders or subcontractors hold the key position in every building project. They are the essential middlemen or fabricators who produce the structure wanted by Owner or Architect with materials supplied by Dealer and Manufacturer. How this situation may be fully capitalized is told in the text.

You Must Get Business to Make Profits!

HE great problem before builders and contractors in this country is not how to handle the business they get, but how to get the business to handle. Unless a builder has work in hand, he has little chance of making profits. No builder worthy of the name is unfamiliar with methods of construction, but the best builder can make little progress unless he knows how to sell his experience and his organization.

Before surveying as briefly and yet as comprehensively as possible the business methods that have made profits for many hundreds of successful builders, it will be exceedingly helpful to consider the general situation so as to develop a proper perspective of the builder's importance among the various factors that contribute to any building operation.

There are six important classifications of the people with whom builders work. In them are included owners, architects, sub-contractors, building material dealers or manufacturers from whom materials are secured, bankers who supply both credits and money for construction, and very often real estate brokers or agents who so frequently play a part in making the operation possible.

SIX FACTORS THAT CONTROL THE BUILDERS BUSINESS

position to the builder, we find a situation which is graphically expressed in the chart on the opposite page entitled, "The Builder's Key Position in a Conowner, the architect, the various sub-contractors cial and real estate factors—are more remote actual planning and construction, and two-the finanstruction Problem." terials-and relating these factors in their relative project, four are very directly concerned with builder works in the development of any normal the dealers or manufacturers who supply his the four with whom the builder normally works—the fluences which require separate consideration. Taking Of the six factors above described, with whom maand the in-

On this chart it will be noted that the builder is embodied in two forms, either as a general contractor or as a merchant or speculative builder. The distinction is quite apparent, for the merchant builder is looked upon as one who operates on his own account without direct control by any owner or architect.

In this first chart, it will be noted that the builder maintains a very direct contact with the architect whenever an architect is employed, and an indirect contact with the owner. Sometimes this latter contact is direct between the contractor and owner, when the latter is developing his project in the early stages. When no architect is employed, there is a strong interchange of ideas and control between owner and builder. These contacts are emphasized because they represent important opportunities for the builder to develop profitable business.

The builder, whether he takes the form of a general contractor or speculative builder, maintains working contacts with sub-contractors and the dealers or manufacturers who supply his materials. To a somewhat lesser degree than before, these working contacts are also susceptible of use as channels for the procurement of more business.

FIRST STAGE

Having thus established the contractor's general position in relation to the four major factors in a project, let us see how these relationships vary during the period from the inception of the project until contracts are closed and construction has begun. In the chart on page 24 dealing with the inception of a building project, three conditions are presented: (a) When an architect is employed, (b) when there is no architect employed and (c) when the builder is functioning as an architect on his own project.

At this stage, in both the "A" and "B" sections of the chart, it will be noted that the contractor is one of the principal sources of information for both the architect and the owner on many practical phases of the proposed building project. The builder is consulted regarding costs, the merits of the materials and the general character of the proposed building. He is often brought into conferences on financing and real estate values which brings him into contact with the two lesser factors not shown on the chart.

SECOND STAGE

The next stage of the project is shown in the chart on page 25 which represents the conditions when the owner has reached a decision to proceed with the planning of a specific type of building. Here the owner and the architect will gather all possible data affecting the proposed operation.

At this stage, the contractor's place in the picture becomes fairly well defined. If a builder can place himself in a position to be consulted at this stage, it is only inevitable that he will stay with the project at least until the final selection of a builder is made by the owner.

THIRD STAGE

The third stage of development, representing the period when final drawings and specifications are being prepared, is charted on page 26. The project now has taken definite form, the types of materials to be employed have been established and the architect is concerned with preparing the documents that will define the project in precise detail.

When no architect is employed, the general contractor must function as an architect in assisting the owner to prepare the necessary drawings and specifications. On projects where no architect is employed, the general contractor is often selected by the time this stage has been reached. The profit which the builder draws out of this situation is very largely governed by the accuracy of his knowledge of build-

tractor's Business Chart Functional of the General Con

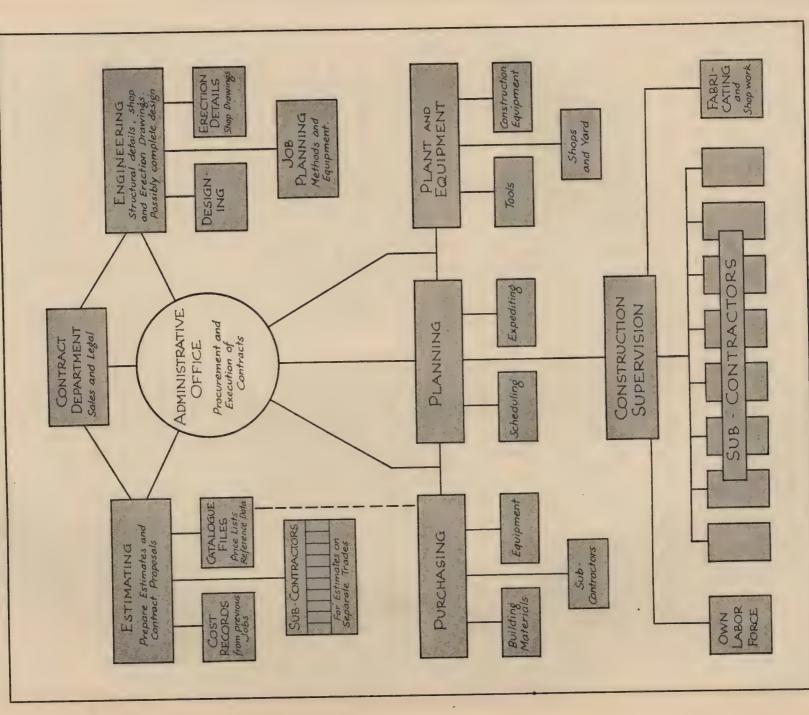


Fig. 2—Every building organization, large or small, performs the various functions shown above. As small organizations grow in size the different divisions of the work are placed under the direction of separate executives. All divisions can be made to contribute directly edifferent divisions of the work are placed under the properly managed.

ing costs and by the adequacy of his knowledge of building materials and their use.

FOURTH STAGE

There specifications. He must know whether or not the how to buy intelligently which means sometimes spending a little more for his materials than the cheapest price offered in order to save installation graphically presents the condition of affairs when builder's ultimate profits. In the first place the builder the builder must know where to get cost data, quotations, labor estimates and installation information on prices offered represent sound value. He must know comes an actual reality is illustrated on page 27 which are several situations at this point which influence the is procuring what may be called "purchase options" on many types of building materials and on the servall of the materials called for in the drawings and labor costs or to save time in deliveries so that his ices of a variety of sub-contractors. At this stage, The fourth and last stage before the project beestimates and proposals are being prepared. net profit will be the greater.

his estimates so that no elements are omitted and so that, at the same time, no unnecessary items of cost are injected to endanger his chance of winning the Secondly, the contractor must know how to prepare This matter is discussed again later. job.

and proposals have been prepared and submitted to reducing costs without materially affecting either the in fact almost inevitable—that the bids will run somewhat higher than the owner anticipated. Then the contractor is called into consultation on methods of Here the contractor's practical information supersedes that of the architect in many respects and is of utmost value A third situation frequently arises after estimates the owner or to the architect. It is quite commonsize or quality of the finished building.

materials and their costs become so important, it will In all of these latter stages where knowledge of be noted that the NATIONAL BUILDERS CATALOG functions as a very helpful source of the data that are needed.

CAPITALIZING THESE DIRECT CONTACTS

architects, sub-contractors and dealers in ways which Obviously owners are the first concern of builders who seek to increase their volume of busitunities to work with a single owner and by providreference through which he can anticipate highly the builder is maintaining contacts with owners, can be capitalized for both immediate and future ness. If the builder takes advantage of his opporing desired information and helpful guidance so impresses the owner with his worth and practical knowledge that he gains the latter's confidence, he has created both a friend and a valuable business favorable business contacts with the owner's ac-During the four stages that have been pictured,

Similarly, if the general contractor or builder makes himself an invaluable aid to the architect, he auto-

NATIONAL BUILDERS CATALOG

type on any operation on which the architect is enmatically assures himself of future contacts of similar gaged.

23

The good will and friendly support of sub-contractors has a less obvious but nevertheless equally valuable contractors have many contacts beyond those which seeking work through all sources and they sometimes In working with his sub-contractors, the builder opportunity for establishing the good will that leads the builder brings to them. They are constantly are working directly with the owner on minor jobs. to business progress. It must be realized that submay prove to be of very tangible value.

The building material dealer is no longer a mere The dealer looks upon the builder as one of his most is making many contacts that may lead to larger consive dealer is trying to create business by advocating He has become a merchant aggressively developing valued customers but, at the same time, he is trying to sell materials to home owners for improvements and modernization work, and through this activity struction operations. At the same time, the progresimprovement work and by assisting realtors and indealers who are aware of their business opportunities, his own sales through all manner of selling activities. storekeeper to whom the builder goes for his supplies. vestors in carrying out development projects. are valuable sources of new business.

WORKING WITH BANKERS AND REALTORS

The other two factors with whom the builder comes in contact and whose relationships have not been developed in the foregoing charts, are the bankers and the realtors. Both are worthy of intensive cultivation by the builder.

The first is because he can aid the builder through friendly business guidance and financial judgment in The banker is important for two distinct reasons. the conduct of his financial operations.

Very many home owners are timid about proceeding with building operations, beis developed in more detail in a later section and thus The banker is important for a second reason because, through him, builders can frequently arrange for the financing of projects which prospective owners cause they know nothing of mortgage financing, or they do not know where to turn for the funds which This matter must supplement the cash they possess. needs no further discussion here. are contemplating.

represents a valuable source of funds which builders The agent is also selling land and often is The realtor possesses knowledge of many opera-The real estate agent is constantly selling existing houses and often knows of owners who want to make tions with which the builder should make contact. improvements either before or after a sale or pur-The agent frequently acts as a mortgage broker and selling it to owners who intend to build immediately can obtain on behalf of their prospective clients. chase.

Thus there has been developed a fairly complete picture of the six factors with whom the builder works and from whom he obtains the greater part of his business.

Development of a Building Project

First Stage: Inception of Building Project

U

IF THE OWNER DOES NOT EMPLOY AN ARCHITECT FOR

WITHOUT ARCHITECT

ADVICE AND FOR PLANNING AND SUPERVISION, HE

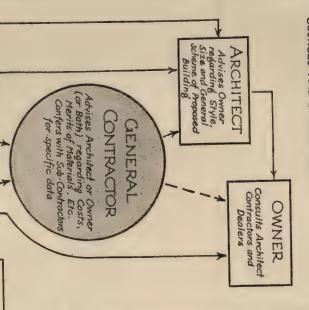
USUALLY SELECTS A GENERAL CONTRACTOR TO HANDLE

SUB-CONTRACTORS, DEALERS AND MANUFACTURERS.

HIS PROJECT, THE OWNER SEEKS DATA FROM ALL

SOURCES, PARTICULARLY THE GENERAL CONTRACTOR,

A WHEN ARCHITECT IS EMPLOYED BEGINS TO GATHER DATA THAT WILL AID HIM TO WHEN AN OWNER FIRST CONSIDERS BUILDING HE TENTATIVE CHOICE OF SEVERAL GENERAL CONTRACTORS, RESULT IN THE SELECTION OF AN ARCHITECT, THE PARTICULARLY SUSCEPTIBLE TO INFLUENCE BY THESE MATERIAL DEALERS AND MANUFACTURERS. HE IS AND BRING HIM INTO CONTACT WITH SUB-CONTRACTORS HE WILL GAIN BY BUILDING HIS INQUIRIES USUALLY DECIDE WHETHER TO BUILD WHAT TO BUILD AND WHAT SOURCES AND BY ADVERTISING



CLOSELY FOR IDEAS AND HELP. HE WATCHES ADVERTISEMENTS AND SALES LITERATURE Advises Owner regarding Costs, Merits of Materials and aids him in deciding what to build SUB-CONTRACTORS CONTRACTOR Advice on Costs and Materials CENERAL Consults Contractors Dealers and Manufacturers OWNER Influence Owner and Contractors in Choice of Materials through Advertising and helpful Data DEALERS & MFRS

Influence Owner, Architect and Contractors through Advertising and helpful information MANUFACTURERS DEALERS AND CONSTRUCTION THROUGH SUB-CONTRACTORS GENERAL CONTRACTOR IN ONE, HANDLING MAY BE OWNER, ARCHITECT AND Influence Spec. Builder by showing profit possibilities and Earning Power of Proposed Building SUB-CONTRACTORS DEALERS & MFRS THE MERCHANT or SPECULATIVE BUILDER Consults Sub-Contractors Dealers and Manufacturers Seeks Selling Features and Margin of Profit SPECULATIVE MERCHANT BUILDER

SUB-CONTRACTORS

Fig. 3—If the Builder follows the methods described in the text he will be able to establish early contact with both Architect and Owner and render these factors assistance that should assure him of preferred consideration throughout later stages of development.

NATIONAL BUILDERS CATALOG

Development of Second Stage: Preliminary Planning a Building Project

A WHEN ARCHITECT IS EMPLOYED

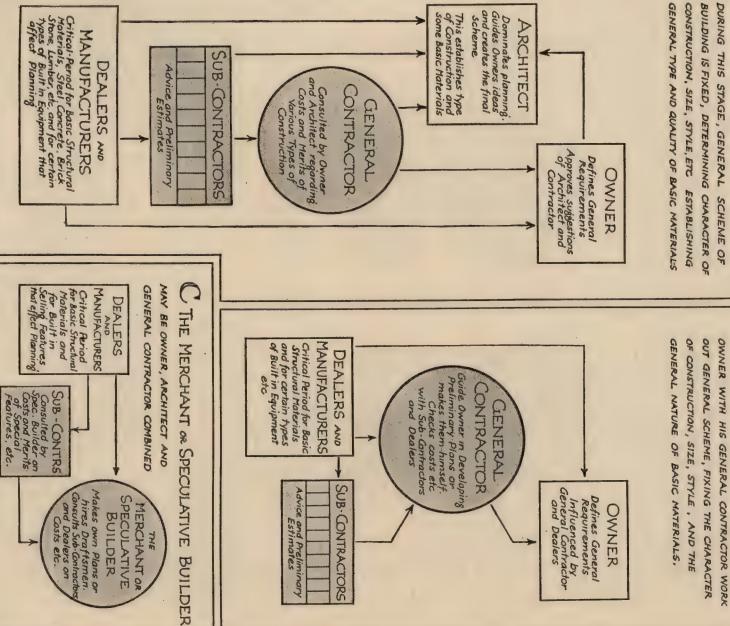
田

WITHOUT ARCHITECT

Influenced by General Contractor and Dealers

Requirements OWNER

DURING THIS STAGE, GENERAL SCHEME OF CONSTRUCTION, SIZE, STYLE, ETC BUILDING IS FIXED, DETERMINING CHARACTER OF



SUB-CONTRACTORS

Fig. 4—The Builder may be consulted frequently by both Architect and Owner during preliminary planning if he has made proper contacts with these individuals as related in the text. This is the period when complete confidence should become established.

Makes own Plans or hires Draftsmen. Consults Sub-Contractor

SPECULATIVE
BUILDER

MERCHANT OF

Building Project Development of a

Third Stage: Drawings and Specifications

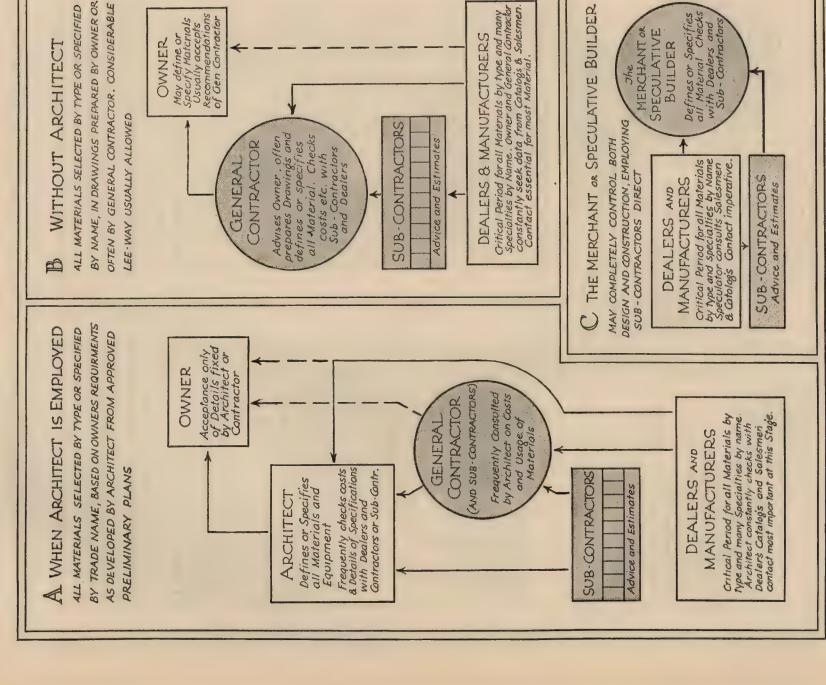


Fig. 5-During this stage the Builder may be very useful to the Architect if the latter's confidence in the Builder's knowledge and integrity has been firmly established. When no Architect is employed the Builder must perform many of his functions for the Owner.

NATIONAL BUILDERS CATALOG

Development of a Building Project

27

Fourth Stage: Estimates and Proposals

OWNER

DRAWINGS AND SPECIFICATIONS, THE GENERAL CONTRACTOR SUBMITS TO THE OWNER A BID OR ACCURATE COST ESTIMATE C THE MERCHANT & SPECULATIVE BUILDER AFTER THE BUILDING IS FULLY DEFINED IN WORKING Receives bid or Estimate from General Contractor and signs Contract ESTIMATES FOR LABOR, AND PURCHASE OPTIONS FOR FOR THE COMPLETE JOB THIS FIGURE IS BASED ON DEALERS AND MANUFACTURERS Quoles prices to Sub-Contractors & General Contractor for Materials. Critical point for all Material not specified by name WITHOUT ARCHITECT SUB-CONTRACTORS Sub-Contractors and Dealers and assembles them into a Complete Proposal or accurate estimate isbuilt proposals to Gen Controposale options. CONTRACTOR CENERAL for Owner ALL MATERIALS SUB-CONTRACTORS DRAWINGS AND SPECIFICATIONS, GENERAL CONTRACTORS AFTER THE BUILDING IS FULLY DEFINED IN WORKING THESE BIDS GO THROUGH THE ARCHITECT TO THE OWNER. ARE INVITED TO SUBMIT BIDS COVERING THE COST OF THE COVERING ALL REQUIRED MATERIALS AND EQUIPMENT BY THE GENERAL CONTRACTOR AND SUB-CONTRACTORS A WHEN ARCHITECT IS EMPLOYED LABOR INVOLVED, AND PURCHASE OPTIONS OBTAINED WORK. THESE ARE BASED UPON ESTIMATES OF THE Receives bids through Architect and signs contract. FROM MATERIAL DEALERS AND MANUFACTURERS, OWNER Receives proposals from Sub-Contractors for Labor and Materials, and and Materials, and some bids direct from Dealers and Manufacture CONTRACTOR GENERAL Comprising the Submit proposals to Gen Contra based on Purchase Options SUB-CONTRACTORS Receives bids from General Contractors Submits them to Owner and advises on award of Building Contract ARCHITECT

OWNER, ARCHITECT AND GENERAL CONTRACTOR COMBINED) MERCHANTOR

Receives proposals f Sub-Contractors and Dec Awards individual Contract for each class of work. SPECULATIVE DEALERS AND MFRS
aude prices to Sub Contra and
Spec Blatrs Critical point for all
materials not specified by name Submit proposals to Spec. Bldi based on purchase options

Quote prices to Sub-Contractors and General Contractors for Materials Critical point for all Materials not specified by Name

DEALERS & MFRS

Fig. 6—The last stage of selling prior to actual signing of contract. Here both the Builder's price and his reputation for performance are determining factors in closing the job. After first bids or estimates are submitted there is usually an opportunity to help the Owner or Architect bring costs into line with budgets.

Functional Plan of an Architects' Office

Showing Divisions of Work (Shaded) in which Contractor may be Consulted

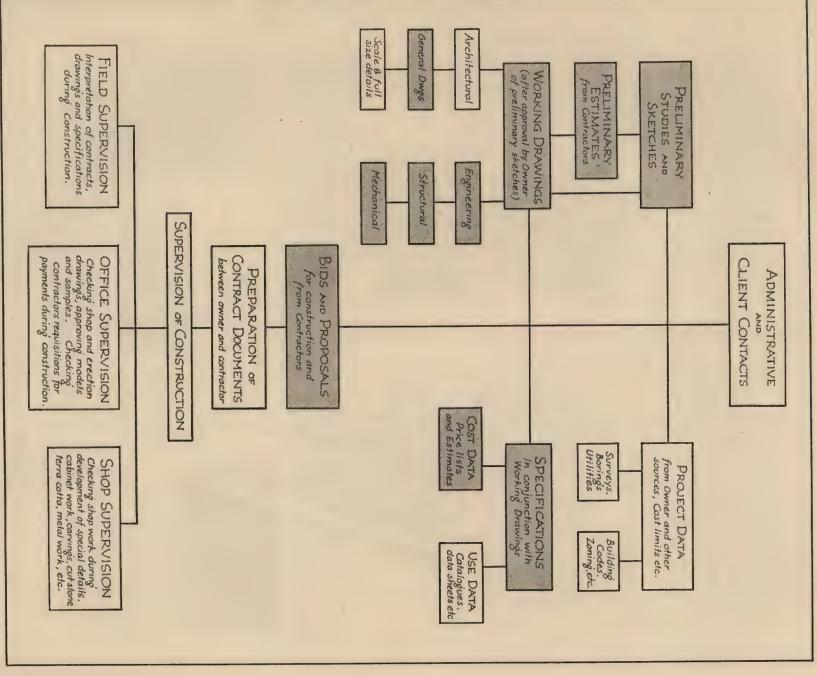


Fig. 7-Shaded areas indicate divisions of the Architect's work in which Contractor's knowledge and experience may prove helpful.

These are the "open doors" to the Architect's office.

NATIONAL BUILDERS CATALOG

Facts and Figures to Help You Get Business

its books must every year solicit at least two hundred more on the theory that about as many new customers will be gained as are lost. To increase business a soliton area. ENNETH M. GOODE, marketing expert, has proposed a law of sales effort to the effect that "every sales organization, to hold its own, must every year actively solicit its own weight in customers." By this he means that an solicit considerably more prospects each To increase business a selling organization must derably more prospects each year than it has

customers, especially the builder who finds most of his work in the erection of private dwellings. These builders lose a customer, in a sense, every time they complete a project, i in the erection of private dwellings. the builder Applying this principle to the builder's business means that ne builder must constantly widen his acquaintance every ear. The builder does not often have a steady line of

seldom does one man build new houses for himself at regular intervals throughout his life time.

Thus of first importance in successful building is the establishment of a system of cultivating new contacts. The six factors described in the last section represent the most profitable types of contacts and the practical application of this thought takes the form of making a local survey of the sources

PLANNING FOR INTELLIGENT BUSINESS GETTING

bankers, mortgage lenders and realtors. Men who invest in real estate and buildings are not so readily discovered, because is usually easy to procure, and other architects will generally suffice. Similar sources are used to develop the lists of business men of his community and upon all new comers with a view to finding out first, whether or not they have money to invest in mortgages or in building operations and, those who are prospects for remodeling. Those who are prospects for new building operations and ness getting along the following lines. They have veloped lists of architects, bankers and other his interest that he favors building projects as a source of income. One builder makes a habit of calling upon the they may be the local grocer, the druggist, the doctor or building funds, realtors, investors in building and mortgages, building of their own. second, to find out if they are prospects for a home or business postman. One never can tell until such an investor reveals Several builders have successfully employed a plan of busiess getting along the following lines. They have first de-Their consumer lists have been of two types: sources

repair, a porch that needs reconstruction and a house that appears to be falling out of step with the times and local land value, he makes a note of the address, checks the address through the telephone book and puts the name on his list for discovered most frequently by observation. A builder who specializes in this work spends his spare time driving through the streets of his community and observing the condition of its homes and business buildings. If he sees a roof that needs of this information if they can be induced to reveal it. Prospeccalls for ingenuity and constant watchfulness. Realtors and other agents and brokers are usually the most prolific sources of this information if they can be incommization work can be tive customers for remodeling and modernization. A builder who a call or a letter. Development of lists of prospective home owners likewise

people who represent potential sources of business, these each type of prospect. progressive builders establish a definite plan for cultivating thus surveyed the territory and compiled lists of

CULTIVATING ARCHITECTS

Many builders call upon architects as a matter of course and ask them for an opportunity to bid on their next project. This is not particularly intelligent selling, for every builder uses the same approach and gets much the same reply from the the same approach and Many builders call upon architects as a matter of course and gets much the same reply from

which no request is made for an opportunity to figure on some new job, but in which the whole tenor of the conversation is The five charts presented on preceding pages suggest a much more practical method of procuring business through architec-tural sources. It involves personal calls at regular intervals in portunities for the architect to procure business and similar matters that help the architect make profits for himself.

A friendly approach of this kind seldom fails to produce results. The builder in effect offers to help the architect in the on the theme of building costs, building materials, new op-

solution of the latter's problems, saying little about his own. The inevitable result is that the builder is consulted in the early stages of an actual project. In short, the old axiom solve a problem by means of your own product or service, your own sale will take care of itself." early stages of an actual project. In short, the old axiom of selling is proved successful: "If you can help your prospect

CULTIVATING BANKERS AND MORTGAGE LENDERS

Most builders are accustomed to maintaining friendly contacts with their own bankers, but few realize they can equally well establish contacts with every banker in their territory. The approach to these bankers, with whom they have not handled previous business, is generally placed upon the basis residential appraisal work, in establishing an acquaintance that will enable the banker to recommend the builder upon occasion and in developing a broad knowledge of where loans can be procured for the benefit of prospective building cusin enhancing the builder's own financial standing, in procuring the banker to find conservative outlets for their nds. At the same time, the contact often results

Bankers exert very powerful influence in their communities as advisers to their own customers who are seeking either sound investments for surplus funds, or builders to whom they may safely entrust their intended operations.

CULTIVATING REALTORS

ships among them. They are constantly seeking profitable business for themselves and jealously guard information that might affect their chances to make a sale or trade.

On the other hand, they are very willing to exchange helpthis fact should be borne in mind in developing acquaintance-ships among them. They are constantly seeking profitable Real estate agents and brokers are essentially traders and

that a builder may induce that investor to put his money into a building operation on undeveloped land he may now own, willing to reveal the names of investors who have place in real estate or buildings if he thinks he can nvestor a piece of land or an existing building. ful information. A broker, for example, is not particularly the names of investors who have funds to

thus freezing him out of a commission on other sales.
On the other hand, a broker has no hesitancy in revealing the name of some customer who has purchased land with the definite intention of erecting a home or other building upon it, for he has completed his sale and he knows the customer will sooner or later proceed with his operation.

To achieve a successful contact with real estate agents and

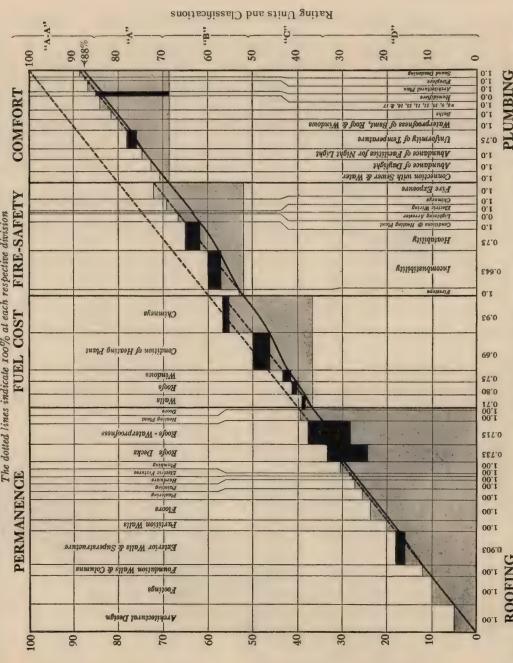
form of leads the builder has picked up here and there, cating the interest of some prospect in the purchase of upon which to build, or it may be that the builder can to the broker as a source of mortgage money for operations with which he has contact. Here again the builder can cultivate brokers most effectively by first helping the broker make profits for himself. the builder must have something to offer in return information he seeks to obtain. This may take the

DEVELOPING OWNER PROSPECTS

As the builder gradually acquires the names of potential prospects for new buildings or for remodeling or modernization operations through the sources above enumerated, he will find his list rapidly mounting in size for two reasons. First

Typical House 7 Official Rating of The dotted lines indicate 100% jo

at each respective division



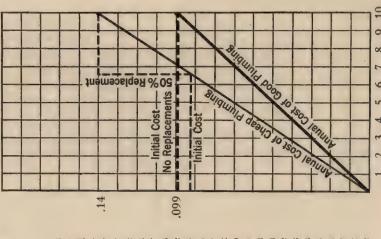
.108 90 in 10 Years 5 Year Life 100% Replacement No Replacement -Initial Cost 19 Initial Cos

How Bankers and Insurance Companies Are Planning TO RATE BUILDINGS

ROOFING

struction cost only. It recognizes four factors—permanence, fuel cost, fire-safety and comfort. Each element in the house The rating system above illustrated in diagrammatical form appraises the valuation of a home on its cost over a period of ten years rather than its initial conis rated according to its importance in creating sound value, which accounts for creating

the different spacing of the diagonal lines in the above diagram. The diagonal line shows an ideal rating; the solid line shows the actual rating given to a typical house. Houses that get a rating below 35% are given a D classification and warrant only the most conservative loans, or no loans at all. Houses from 35% to 50% are given a C classification; those from 50% to 70% a B classification; those from 70% to 85% an A classification; those from 70% to 85% enjoy an A-A rating. Houses above 85% enjoy an A-A rating. Houses in these upper brackets are preferred risks and will enjoy maximum loan values and will enjoy maximum loan values among bankerswho adopt this new system. The small charts to each side show typical methods by which the rating bureau figures the values added by the



materials and workmanship.

6

90

9

because there are relatively many more owner prospects than second, because an owner prospect may not become active for several years after his name has been placed on the list. there are architects, bankers or brokers, and,

for a telephone call to each person as his name is put on the list will generally reveal whether or not the prospect is active. Later on, as the list increases in bulk, it will be difficult to follow up these calls by telephone and the builder must have recourse to letters, and eventually to circulars and other direct mail as well as to advertising. Bear in mind, however, that a personal letter written with some knowledge (though The problem of making the acquaintance of these prospects eventually would take all of the builder's time if personal calls were his only recourse. The telephone is a great time-saver, meager) of the owner's particular problem is far more ful than any circular letter, folder or advertisement.

ADVERTISING VERSUS PERSONAL CONTACTS

If one followed the foregoing suggestions to their logical conclusions, the builder would cease to be a builder and would become a salesman. That is exactly what happens with some of the most successful building organizations, and yet many builders think it would be fatal to their success.

Builders who are good salesmen can usually employ executives, superintendents and clerks to carry on their construction business, providing they can procure a sufficient volume of new work to make such a move logical. But those builders who have not any flair for selling and who find it difficult to spend time for this type of activity have recourse to either of

but it never completes the sale without personal contacts. If these principles are borne in mind, the value of advertising can work becomes too burdensome for the head of the firm. The second is to employ advertising and direct mail work. There two methods.

The first is to employ a salesman when this phase of the is no competition between advertising and direct salesmanship. Cirformer supplements the latter and broadens its scope, be properly appraised and the amount warranted by the cumstances can be readily judged. The

magazines, on billboards and by direct mail, establishes the builder's name and enhances his prestige at the same time that it reminds prospective customers of where they should sources of leads to people who are active potential customers. Intelligent advertising in the local newspapers and local Advertising, however, has one very distinct value that should never be overlooked. It constitutes one of the most important establishes the turn for building services. Such advertising is most effective if it offers the prospect some helpful service or information without placing him under any obligations.

REMODELING AND MODERNIZING FOR SLACK SEASON BUSINESS

declines. As one writer says, "Builders can turn snow-flakes into dollars, for it never snows in the attic or cellar." His thought is an excellent one, for a great deal of work can be done indoors to make old houses more comfortable and to restore their declining market value to nearly that of a newly There are no dull seasons for remodeling and modernizing. In fact a great deal of this type of work can best be done in the fall and winter when the volume of construction work usually completed home.

dollar the aggregate, there is a vast amount of work builder who is aggressive enough to seek it and who wants to keep his men employed at a profit when normally no profitable new construction jobs are available. modernizing, average, they probably are of little importance in their overlook remodeling and moderni dual jobs are likely to be small. cause the individual jobs builders value, but in ready for the Some

MILLIONS FOR MODERNIZATION

The importance of this work has been recognized by the Department of Commerce which reports that "the modernizing of existing structures is estimated to have brought over \$500,000,000 to the building industry in 1929. A former assistant director of the Bureau of Standards has stated that

central nated \$24,000,000,000 worth of modernizing The speaker said that "12,000,000 people was contemplated for living in American cities of 10,000 or more inhabitants, no bathrooms; that more than 1,000,000 homes within ce station areas are not wired for electricity and that tw million of the twenty million one-family and two-family in the United States are said to need modernizing." 1930 out of an estimated \$24,000,000,000 worth work to be done. The speaker said that "12 modernizing worth of \$2,000,000,000

THREE OUT OF FIVE HOMES NEED MODERNIZING

six million dwellings. The families lived in 2,228 communities, representing 48 states and the District of Columbia, and they account for over 32,000,000 people, or nearly half the estimated number of persons living in incorporated villages, towns and cities at the time of the survey. Here are a few facts from this survey that indicate a few of the opportunities for modpleted a survey of all equipment. The investigation embodied information from nearly eight million families housed in about The General Federation of Women's Clubs recently ernizing work.

16.1% of the homes have no kitchen sinks.
17.8% of the homes have no water closets.
31.7% of the homes have no bathtubs.
71.7% of the homes have no laundry trays.
28.7% of the homes have no lavatories.
51.3% of the homes have no furnaces or boilers for

central heating.

SURE PROFITS IN MODERNIZING

m each project Most of this t, because it is , specifications extra bathrooms, rearranging interiors, overcoating the house with stucco or masonry veneers, new chimneys and fireplaces and important interior redecorations, such as paneling, tile It is well to keep two things in mind when considering remodeling and modernizing work (which, by the way, is to be distinguished from mere repairing). The first is that many remodeling operations represent from \$2,000 to \$10,000 worth of work. These jobs include minor additions, introducing work, ornamental ceilings and the like. The second point to bear in mind is that while the average size of the job may be relatively small, there is little competition on each project and the profit margin is usually fairly high. Most of this and the profit margin is usually fairly high. Most of work must be handled on a cost-plus contract, because exceedingly difficult to prepare accurate plans, specifical and estimates for work of this sort.

Sources of Modernizing Business

mobiles, radios and other luxuries that have become necessities. The builder who seeks modernization work is competing with these trained salesmen for the surplus dollars in the home owner's bank account. This statement may cause a timid builder to reject the idea of seeking profits in this field on the score that he is not a high-pressure salesman and is The problem of getting this type of business is not very different from the salesmanship required in marketing autonot equipped to put on an expensive campaign that will produce the requisite leads.

produced in this field is very closely in proportion to the amount of effort spent in obtaining it. The values resulting that may be secured, because very often the most important thing in a builder's business is to keep his organization to-The only answer to this argument is that the business is available for builders who want it. The volume of business from modernization work, however, exceed the mere profits

new houses. Featuring this argument in a sales talk enables the builder to compete more successfully against the credit buying system employed by the salesmen of automobiles, It should be appreciated that very few home owners realize that they can finance permanent improvements to their homes radios and similar products that now absorb most of the home owner's surplus funds. In the following section, there is a brief discussion of finance methods adaptable to remodelin much the same way as they finance the construction of ing and modernization projects.

BUILDERS WHO CAN ARRANGE FINANCING GET THE CREAM

home owner wants, except such perishable materials as food and clothing, can be bought "on time" with payments ex-tended over a period of many months to sometimes several Credit buying, in a broad sense, may be said to have originated in the field of real estate and building construction, for mortgage financing was one of the first methods established owners toward mortgage financing.

many of the favorite melodramas by which a buyer could enjoy possession of his purchase long This trend has changed the attitude of many home toward mortgage financing. In the Gay Nineties, he completed his payments that gave him exclusive Today almost every type of merchandise were built around the

horrors of poverty resulting from a villainous foreclosure of a mortgage on the old home.

Even today some people dread a mortgage as they dread the plague, because of their complete ignorance of the safeguards that are set up by law and custom to protect their equities. deferred—by showing the owner how to finance his building above the cash equity he possesses. the details of loans can often secure a profitable contract— or can start a project that would otherwise be indefinitely ing that builders who know how to secure funds and arrange There is still so much ignorance concerning mortgage financ-

BUILDING LOANS OF THE FUTURE WILL BE BASED ON Before discussing in more detail methods of financing build-QUALITY

on any single project to a very conservative percentage of the total value of the finished property. bankers have sought to protect their mortgage loans by the simple process of limiting the amount of money they will lend builder's relationship to mortgage financing. For many years, building improvement operations, it is proper to for a moment and look at another aspect of the

entered into the procurement of many loans and resulted in a Simple as this system was from the banker's point of view it never proved satisfactory, because appraisals on which the more than seventy to seventy-five per cent (even though many building and loan associations are authorized by their charter loss of protection to the lender. loans were made were seldom accurate and because trickery to lend up to eighty per cent of the appraised valuations). First Second mortgages have seldom brought the total mortgages have seldom exceeded fifty to sixty per to

BUILDINGS WILL BE RATED LIKE SHIPS

seen throughout the shipping industry. Cheap construction vanished. Well-built ships were given a preferred rating quickly adopted the rating and protected the owners of the ships in proportion to the risk. The result was immediately seen throughout the shipping industry. Cheap construction A similar condition existed many years ago in the construction of sea-going vessels until Lloyd's Registry was so that it paid well to build well. struction and seaworthiness. undertook to established by great marine insurance powers. This registry examine ships and rate their quality of conquite scientific. This rating was entirely im-fic. The insurance companies

investment value of their properties in terms of permanence, fire-safety, cost to operate (fuel savings, etc.) and comfort. This will raise construction standards which will favor very strongly those builders who have already learned the economic value of good design, good materials and good workmanship. In the second place, and this is more pertinent to the present discussion, the rating of buildings will very definitely affect financing methods as rapidly as this new movement is adopted in different parts of the country. It will be noted on the fold character. First, building owners and the buyers of merchant-built homes are, for the first time, able to judge the bankers, insurance companies and other factors concerned with building finance. A rating system has been developed which is illustrated in the accompanying chart. The important point about this new movement to present-day builders has a two-A similar movement has recently been instituted among

accompanying chart, along the right hand edge, that buildings will be classified into five groups by the letters and brackets A-A to D.

brackets, however, will get very favorable consideration from bankers and lenders with the highest loans going to the A and A-A ratings. In short, loans will be apportioned on the portion their loans in accordance with the quality of the building rather than upon old arbitrary standards which fail to offer the requisite protection. A building that is given a D rating by an unbiased rating bureau will find extreme difficulty in getting a loan of any amount. A rating in the upper basis of quality. The real purpose of the rating is to enable lenders to ap-

Justification for rating houses according to their cost at the end of ten years rather than upon their initial cost is indicated in the tabulation at the bottom of this page which compares the cost of a cheap house with the cost of a quality house at the end of that period.

THE CHEAP HOUSE Building and Upkeep Costs THE QUALITY HOUSE

	5%	CONSTRUCTION 26%	ONSTRU	VIII Verisia	CENT OF	PER	•	
\$14,687.50 5,197.50	0 · · · · · · · · · · · · · · · · · · ·		• • • • • • • • • • • • • • • • • • • •	Net cost "quality" house	impared to	Net cost "quality" house co	cost "quali	Net Savir
\$16,937.50	\$750	107.95 \$16,187.50	107.95\$	Totals	\$19,885	\$15,000 \$4,885 \$19,88 Credit items for fuel savings	\$15,000 it items f	100 Cred
1.410	9 4 0	1,410	9.4	Builder's Profit	1,020	a o	1,020	6.00
450		450	Cu	Landscaping	450		450	3.0
6/5		675	4.5	Architect's Fees				*
240	•	240	1.6	Financing.	1,305		1,305	00
1,350	450	900	0	Painting and Glass	1,475	800	675	4.5
4,380		4,380	29.2	Carpentry	4,580	500	4,080	27.2
1,150	0 0	1,150	7.7	Heating	1,300	250	1,050	7.0
1,585	100	1,485	9.9	Plumbing	2,095	700	1,395	9.3
1,090	100	1,590	10.6	Stucco, etc	1,900	310	1,590	10.6
1,600	100	1,500	10.	Masonry	1,875	465	1,410	9.4
900) =	900	6.	Roofing	1,620	810	810	. A
487.50		487.50	3.25	Electric Fixtures and Wiring	675	270	405	2.7
435		435	2.9		600	300	300	2.0
2/0		270	-00	Excavating and Grading	270		270	.00
105	0 0	165	-	Flashings, Downspouts	315	210	105	. 7
\$150		\$150	1.0	Screens	\$405	\$270	\$135	.9
Costs	Costs	Costs	Cent	The Material	Costs	Costs	Costs	Cent
10 Years	Secondary 10 Years'		Per		10 Years'	Secondary 10 Years	First	Per
Ö	includes architect's ree	includes a			ee	with no architect's fee	with no	
D	wahitactic fo						PLA PLA	

It Costs \$5,197.50 in ten years to cut quality on a \$17,000 house

NATIONAL BUILDERS CATALOG

Financing Gets Business. Ow to

contract for which others are competing. Many a desirable job has been obtained because the builder was able spells sales power when it comes to securing a building to solve the problem of where to get money. or to direct his clients to mortgage money sources T IS said that money means power. It is certain that the ability of a builder to obtain building funds

TYPES OF LOANS

classifications: Mortgage financing falls into the following general

1. First mortgages;

Second mortgages;

comes who are willing to set aside a certain amount periodical installments; construction loans which are used to cover the period between the starting of the job amortized money each month to reduce the mortgage indebtedness. ticularly suitable for people of moderate but steady inmaturity. Installment or amortized mortgages are parwho are able, if necessary, to pay off the entire loan at are best adapted to people of more substantial means upon the circumstances of each case. Straight mortgages loan is placed. What types of loans to select depends and the completion of the building, when the permanent periodical installments; construction loans which able in a lump sum at maturity; the as, for instance, the straight first mortgage which is pay-First mortgages vary according to a number of factors mortgage which is repayable in monthly 3. Equity financing. installment of. or 01.

> completed. This arrangement saves a substantial amount make an arrangement whereby the construction loan may mortgage money may be found. In seeking funds it in the cost of financing. It is good business for a conbe continued as a permanent loan after the building is erences and restrictions as to what types of loans they should be noted that lenders usually have definite prefloan he considers best adapted to their financial means. tractor to offer sound advice to clients as to the type of There are definite sources in each community where In getting construction loans it is often possible to SOURCES OF MORTGAGE MONEY

hrst mortgage money. will make. Following are listed the most usual sources of

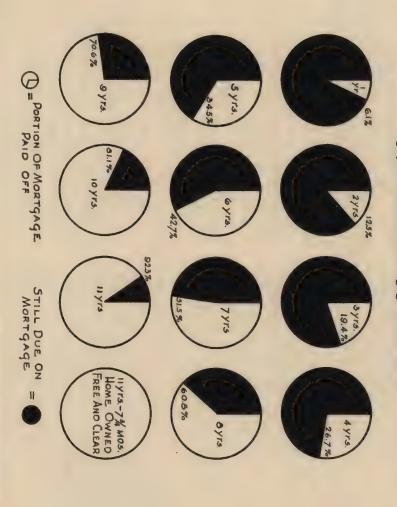
FIRST MORTGAGE FUNDS

owners. about \$10,000 on residential properties occupied by the on real estate mortgage. They prefer loans not to exceed Financing charges are moderate. three to five years at the prevailing rate of interest. Savings Banks. Loans are usually made for a period of from Savings Banks are large lenders

erties. While conservative, trust companies will often administer, which they are willing to lend on local proploan slightly larger amounts than may be obtained from erable amount of money from trust estates which they 2. Trust Companies. Trust Companies have a consid-

Paying Off the Mortgage in Monthly Installments

Below is shown how quickly the one pays off the entire mortgage indebtedness. per cent monthly installment payment plan



How One Dealer Features Financing

WHY NOT BE BUYING A HOME WITH RENT PAYMENTS? Griffin's Home Finance Plan

Company Furnishes in Material and Cash \$4,200-\$5,000 \$4,500-\$6,000 \$1,600-\$2,400 \$2,600-\$3,100 \$3,000-\$3,600 \$3,200-\$4,000 \$3,500-\$4,500 \$6,000— \$8,000 \$7,000—\$10,000 \$2,500—\$4,000 \$7,000—\$11,000 \$1,200-\$1,700 \$550- \$850 \$700-\$900 \$1,000—\$1,500 \$1,400-\$1,900 \$1,600—\$2,500 \$2,000—\$3,000 \$850-\$1,200 \$900—\$1,400 *Cash Needed Monthly Payment Includes Interest) \$35- \$45 \$45- \$56 \$79-\$115 \$50-\$63 \$23- \$28 \$32- \$36 \$39- \$51 \$52- \$82 \$77-\$100 \$36-\$45 \$22— \$28 month \$1,900—\$2,300 \$36— \$46 month \$2,100—\$2,700 | \$40— \$53 month \$5,500- \$7,600 | \$2,600-\$3,300 | \$50- \$67 month \$6,000-\$10,000 | \$2,700-\$4,300 | \$55-\$80 month \$10,000—\$15,000 | \$4,100—\$6,000 | \$80—\$120 month \$1,500—\$1,900 \$30—\$37 month \$38- \$45 month \$4,000—\$5,200 \$77—\$100 month Rent Now Paid \$1,000-\$1,500 \$2,000-\$2,400 \$2,200—\$3,000 Annual \$4,600-\$6,200 \$9,000-\$13,000 \$4,000- \$5,200 \$4,200— \$5,500 \$5,000—\$6,800 \$3,800- \$4,200 \$2,200-\$3,500 Home Can Cost 9 2 ന 색 10 1 00

You will require: Besides the cash* mentioned in the above table, a lot in town or city limits and the realization that all money paid as RENT could be helping to buy a home while you live in it. Sometime means Never. You choose the design, we tell you the complete cost in advance—we show you how the work is handled easiest. If you prefer you can pay every 3 months, 4 months, or semi-annually and pay it all up or part at any time. —Reprinted from Building Material Marketing.

Prevailing Interest Rates

This tabulation shows the average rates of interest on first mortgages, second mortgages, and commercial loans in the United States and Canada for the years 1928 and 1929. These figures were compiled by the Mortgage and Finance Division of the National Association of Real Estate Boards.

Note.—The interest rates given do not include commissions, discounts, or service charges.

č	First Mo	First Mortgages	Second 1	Second Mortgages	Commerc	Commercial Loans
Section	1929	1928	1929	1928	1929	1928
Average for the U. S	6.38	6.34	7.70	7.70	6.41	6.19
New England	5.93	5.93	8.75	8.75	5.85	5.81
Middle Atlantic	5.90	5.88	6.22	6.12	6.00	00.9
East North Central	6.22	6.13	08.9	6.75	6.44	6.10
West North Central	00.9	00.9	7.75	7.75	6.08	5.82
South Atlantic	6.41	6.46	7.89	7.89	6.11	00.9
East South Central	6.08	80.9	6.67	6.67	6.91	6.58
West South Central	7.29	6.65	8.00	8.00	7.29	6.70
Mountain	7.25	7.25	9.50	9.50	7.25	6.75
Pacific	6.91	7.09	9.27	9.36	6.73	6.63
Canada	0.00	6.50	10.00	10.00	:	:

NATIONAL BUILDERS CATALOG

savings banks. Funds are loaned generally for periods not to exceed five years.

3. Commercial Banks. Although commercial banks with savings departments are now permitted under the McFadden Act to make loans on real estate, they are not, as a rule, fertile fields for obtaining mortgage funds. It is well, however, to consider them. Recently many commercial banks have organized finance companies which they own and which are engaged almost solely in the lending of mortgage funds. In such cases there is a good opportunity to obtain loans.

4. Local Insurance Companies. Insurance companies, particularly life insurance companies, are large lenders on first mortgages. In the larger cities very often there are local insurance companies that favor loan applications to persons in nearby territories. Insurance company loans are made for varying periods, extending from three to fifteen years. The majority of loans are made for periods ranging from three to five years. Insurance companies make both straight and installment mortgage loans.

5. Outside Insurance Companies with Local Representatives. Many large insurance companies, located in the bigger cities, make a practice of lending on mortgage in many parts of the country. They are usually represented locally by a realtor, mortgage broker or attorney. These companies are excellent sources for obtaining mortgage loans. Their supply of funds is not often affected by business conditions. They have large sums to lend and are anxious to secure conservative loans.

6. Building and Loan Associations. Building and loan associations make a very large percentage of all residential loans in the United States. They are an excellent source of mortgage funds. Practically all building and loan associations make only installment mortgages which are usually amortized at the rate of 1% per month, including interest, which pays off the mortgage in a little over eleven years. Building and loan associations vary in practice, but will usually loan from 60% to 75% of their appraised value of the property. A number of the associations make construction loans. Their financing charges are moderate and interest rates reasonable.

7. Mortgage Companies. In cities of larger size will be found a number of mortgage companies. These companies generally make more liberal loans than can be obtained from savings banks, trust companies, or other institutional sources. Financing costs are somewhat higher than those charged by institutions.

8. Private Lenders. Many people make a practice of lending their surplus funds on real estate security. Loans secured from private lenders are often more liberal than can be obtained from any other source. Financing charges and the length of the term of the loan are open to negotiation between the borrower and the lender.

SECOND MORTGAGE FINANCING

Second mortgage money is very difficult to find. The number of sources is limited and financing charges are high. Second mortgage financing, however, is usually an essential part of the building transaction. When the builder or the material dealer is not able to supply the needed funds a mortgage application should be made to some of the following sources:

1. Mortgage Companies. Quite a large number of mortgage companies have been organized especially to do

a second mortgage business. These companies usually require that the second mortgage be made and put on file after which they buy such mortgage at an agreed rate of discount. Practically all second mortgages for a period of more than a year are made on the installment plan with a proviso that the entire balance be paid within three to five years.

2. Finance Companies. Some finance companies, although they deal in other types of money transactions, also lend a certain amount of their funds on second mortgage. These loans are usually made for a shorter period than that stipulated by a regular second mortgage company.

3. Private Lenders. A considerable number of private lenders are willing to purchase second mortgage paper because such paper pays a high rate of interest return.

FINANCING MODERNIZING WORK

Because of a slackening of activity in the general building field much emphasis has been placed on the modernizing of older buildings. This has proved a fertile source of jobs for the builder. As in other instances his chances of getting such work are greatly enhanced by his ability to secure financing or to suggest sources from which it can be obtained. Following are some of the sources of modernizing funds.

1. Finance Companies. In a number of cities finance companies have been formed especially to handle loans on modernizing work.

2. Manufacturers of Building Materials. A number of large manufacturers of building materials are now able through their local representative to supply funds covering modernizing work in which their materials are used and in some cases loans are made by them covering the costs of the entire job less a minimum down payment by the owner of 10%, even though their materials constitute but a portion of those used.

3. Building and Loan Associations. Many building and loan associations now make a practice of lending funds for modernizing work. This is usually accomplished by reappraising the property, taking into consideration the increased value due to the modernizing work and making a loan enough in excess of the existing mortgage on the property to pay the cost of the new improvements. A recent report covering the activities of 195 building and loan associations for the year ending June 30th, 1929, showed that during this time 24.23% of all loans made by them were for modernizing improvements.

4. Building Material Dealers. In many instances building material dealers or their financial connections will be found willing to lend funds for home improvements, in cases where such dealers furnish the materials involved.

How to Find Mortgage Money

While it is not difficult to ascertain the sources from which mortgage funds may be obtained it is not always easy to get the money. The reasons for this are numerous. Some sources may be "loaned up" for the time being. Other sources may not care for the particular proposal that is presented to them. Sometimes the amount asked for is high and necessitates considerable searching before a source is found from which a large enough amount can be procured to meet the requirements. An intimate knowledge of local financial sources and just what their loaning condition is is a valuable stock in trade for any builder

Building and Loan Payment Schedules

The following table shows the manner in which a mortgage loan of \$1000 is repaid under the usual Building & Loan Association plan. The table is calculated on the basis of 6% per annum interest charge.

1st Year 1st Month 2nd Month 3rd Month	Payment \$10.00 10.00 10.00	3	How Credited
3rd Month	10.00	5.11 4.93	
6th Month	5500	4.88 4.99	
9th Month	10.00	4.80	
IZUI INIOIIUI	10.00	4.00	
Total 1st Year	\$120.00	\$59.18	00
2nd Year	120.00	35	88
3rd Year	120.00	47.0	2
5th Year	120.00	42.4	-0
7th Year	120.00	32.4	60
9th Year	120.00	21.1	6
10th Year	120.00 120.00	14.97 8.41	17
7% Months	78.65	1.7	3
	\$1,398.65	\$398.65	Si

Fifteen-Year Life Insurance Plan

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Table covers	
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Time Total Payments Principal Interest Unpaid Each 6 Mo. \$30.00 \$30.00 \$970.00 11 year. \$50.00 \$30.00 \$29.10 \$940.00 12 years. \$55.40 30.00 22.50 \$910.00 22.50 22 years. \$55.40 30.00 22.50 880.00 25.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 22.50 880.00 55.50 30.00 19.20 50.00 56.00 56.00 56		\$508.50	\$1,000.00	\$1,508.50	Grand Totals
		3.90	130.00	133.90	15 years
	130.00	3.4.00	30.00	34.80	14½ years
	130.00	3.10	30.00	33.70	14 years
	180.00	n c. 30	30.00	30.00	13½ years
	130.00	1.30	30.00	37.50	13 years
	250.00	3.40	30.00	38.40	12½ years
	280.00	9.30	30.00	39.30	12 years
	310.00	10.20	30.00	40.20	11½ years
	340.00	11.10	30.00	41.10	11 years
	3/0.00	12.00	30.00	42.00	10½ years
	400.00	12.90	30.00	42.90	10 years
	430.00	13.80	30.00	43.80	100
	460.00	14.70	30.00	44.70	9 years
	490.00	15.00	30.00	45.00	8½ years
	520.00	10.50	30.00	46.50	8 years
	550.00	17.40	30.00	47.40	7½ years
	580.00	18.30	30.00	48.30	7 years
	610.00	19.20	30.00	49.20	6½ years
	040.00	20.10	30.00	50.10	6 years
	670.00	21.00	30.00	51.00	5½ years
	/00.00	21.90	30.00	51.90	5 years
	/30.00	22.80	30.00	52.80	4½ years
	730.00	23.70	30.00	53.70	4 years
	/90.00	24.00	30.00	54.00	3½ years
	820.00	25.50	30.00	55.50	3 years
	830.00	26.40	30.00	56.40	2½ years
	880.00	27.30	30.00	57.30	2 years
	910.00	28.20	30.00	58.20	1½ years
	940.00	29.10	30.00	59.10	1 year
	\$970.00	\$30.00	\$30.00	\$60.00	
	Principal Unpaid	Interest	Principal Payments	Total Payments Each 6 Mo.	Time

NATIONAL BUILDERS CATALOG

Legal Rates of Interest and Usury Penalties

0			
		Legal Rate of Interest	
State	%	Comment	Penalty for Usury
Alabama	00	No greater rate by contract.	Recover principal only.
Arizona	× 0	Can contract to 10%.	All interest forfeited and applied on principal. Principal and interest forfeited.
California	7	Express written agreement to 12%.	All interest forfeited and treble damages may be recovered.
Colorado	00	Fixes legal rate.	No usury laws,
Connecticut	6	Can contract up to 12%.	Void as to principal and interest.
Delaware	6	Excess above 6% forfeitable.	No penalty for usury.
District of Columbia	0	By written contract to 8%.	Forfeiture of all interest.
Florida	7 00	By written contract to 10%. By written contract to 8%.	Forfeiture of all interest.
Idaho	7	By written contract to 10%.	Forfeiture of all interest.
Illinois	Cr	By written contract to 7%.	Forfeiture of all interest except in case of a Corporation.
Indiana	6	By written contract to 8%.	Interest in excess of 6% void.
Iowa	0	By written contract to 8%.	Can only recover principal.
Kansas	6	By special contract to 10%.	Forfeits all interest in excess of 10% plus an amount over 10%.
Kentucky	0	No greater rate permitted.	Void as to excess interest over 6%.
Louisiana	, or	By written contract to 8%.	May recover all interest paid over 8%.
Maryland	6 6	Fixes legal rate.	Forfeit excess of real sum lent and the legal interest on such sum.
Massachusetts	ex.	By special written agreement any rate of interest.	Any rate of interest by special agreement can be collected.
Michigan	cn	By written agreement up to 7%.	Loss of all interest.
Minnesota	y 0/	By written contract to 8%.	Any contract over 5% interest is void. More than 8% forfeit all interest. If interest is greater
M. Control of the	, c	By written contract to 8%.	than 20%, forfeit principal and interest. Usurious interest credited to debt.
Montana	00	By written agreement to 10%.	Forfeiture of double amount interest received.
Nebraska	7	By written contract to 10%.	Forfeiture of all interest.
Nevada	7	By written contract to 12%.	Interest above 1% per month is void.
New Hampshire	6	Any rate in writing.	No usury laws.
New Jersey	0 0	By written agreement to 10%; without col-	Legal rate only recovered. Debtor may have judgment for
New York	6	Any rate of interest agreed in writing.	Contract void. Cannot recover principal or interest.
North Carolina	10%	Fixes legal rate.	Loss of all interest. Debtor can recover twice the amount of interest paid.
North Dakota	6	Special contract up to 9%.	Forfeiture of all interest. Borrower can recover twice the amount paid in interest.
Ohio	0/	Written contract up to 8%.	Agreement for more than 8% is void. Corporations are an exception.
Oklahoma	. 6	By written contract to 10%.	Forfeiture of double the amount of interest paid.
Oregon	, 6	Contracts—oral or written—to 10%.	Entire debt is for ested to County.
Pennsylvania Rhode Island	0 0	Fixes legal rate.	No usury laws.
South Carolina	7	By written agreement to 8%.	Forfeits all interest. May forfeit double amount of usury.
South Dakota	7	By written contract to 10%.	Forfeits all interest.
Tennessee	0	Fixes legal rate.	Cannot collect excess over 6%. Usurious amount can be recovered.
Texas	6	By written contract to 10%.	Forfeit all interest. May recover double amount of usurious interest.
Utah	00	By written agreement to 12%.	Contracts for more than 12% per year void as to principal and interest. Payments made thereon can be recovered.
Vermont	01	Fixes legal rate.	Excess above 6% interest is forfeited.
Virginia	. 6	Fixes legal rate. Special laws as to Banks, etc.	Principal only can be recovered.
Washington	o,	By written contract to 12%.	Principal only can be recovered less twice amount of interest paid and less amount of all accrued unpaid interest.
West Virginia	0	Fixes legal rate.	Void as to excess interest over legal rate.
Wisconsin	7 6	By written agreement to 10%.	May recover treble the amount paid.
Wyoming	7	By written contract to 10%.	Only principal can be recovered tess inferest paid and costs.

to have. Below is given a list of some of the means to

If you are not familiar with local sources consult the telephone directory. There you will The quickest way to ascertain whether an application for a loan will be considered is to call these sources on the telephone. Give a general idea of the type of loan required and ask if an application may be presented. It is unwise to "peddle" a loan. If prospective funds have been located it is best to have the loan passed upon before looking elsewhere. If the application is refind the names of bankers, finance companies and mort-

ments of the more important sources of mortgage loans While mortgage 2. Financial Pages of Local Newspapers. Advertisewill usually be found on the financial pages of the local newspapers. This is particularly true of mortgage brokers and local representatives of out-of-town insurance funds. brokers and realtors make a charge for their services they are usually in close touch with the financial situation and jected the matter can then be presented in another place. 3. Mortgage. Brokers and Realtors.

funds of clients to loan. Inquiries to such sources may Attorneys. Many of the larger legal offices have tary of the Real Estate Board.

gage brokers and realtors may be found in the telephone

directory or information may be obtained from the Secre-

a broker or realtor is often beneficial. Names of mort-

with sources of funds and if speed is desired the use of

suggestions as to sources of money are often directed to The business of a banker has to do almost entirely with money and it is natural that he should know where mort-Builders who call on their bankers for individuals or institutions where loans may be obtained. be made by telephone. 5. Bankers.

information is the building material dealer. In order to 6, Building Material Dealers. A very good source of facilitate the sale of his materials the wide awake building material dealer makes it his business to keep in touch with funds which may be loans to prospective home builders. His interest and that of the building contractor coincide gage funds might be obtained.

because the successful conclusion of the financing will mean new business for both of them.

the building contractor in touch with private lenders and worded advertisement in the newspapers will often put others who are prepared to make mortgage loans.

MAKING THE APPLICATION AND CLOSING

It is not good policy to press too hard for an early near-by date set when an answer may be obtained.

the application, is as follows:

a—Map of section of city in which property is lo-

CHECK LIST OF THINGS TO BE DONE WHEN MAKING THE LOAN APPLICATION

Builder or Owner should:

-Name of borrower

b-Occupation

WHEN CLOSING THE LOAN

1 Secure loan application form from lender.
2 See that it is neatly and legibly filled out in detail.
3 Return it promptly to lender and ask, diplomatically, that early decision be given.
4 Provide set of plans and specifications, if loan is for construction purposes. 5 Be prepared to give the following information to lender (and such other data as the application form may call for):

f—Location and description of property. Street number. Legal description. Size of lot, etc. g—What street improvements? Sidewalks—gutters c—Information as to his ability to carry loan
d—In whose name is property?
e—What amount is desired on loan? For what period
of time? Type of loan desired—straight mortgage,
construction loan, etc?

paving, etc. h-Public utilities. Available water, sewer, gas, electric

lights, etc.
i-Owner's valuation of property.

j-Existing mortgages or encumbrances. Amounts? When due? Who holds them? Can they be paid off to purposes for which money

A brief, Advertising in the Newspapers.

THE LOAN

A loan application form should be secured from the facts that should be given are indicated in the "CHECK lender and this form filled out promptly, giving in detail Some of the more vital LIST OF THINGS TO BE DONE" shown below. all of the information asked for.

ten or be so legible if written by hand, that there will be formation and the more complete, the better are the accompany the delivery of the application by a personal tive of the lending company (if application is made to an It is important that the information given be typewritchances of securing a favorable decision. It is best to visit and, if possible, secure a conference with the execuinstitution) who has charge of mortgage loan matters. no difficulty in reading it. The more pertinent the in-

decision but it is well to try, diplomatically, to have a

When a favorable decision has been indicated, the borrower should lose no time in seeing that the loan transaction is consummated. Closing a loan is a complicated and technical process which necessitates the services of a title company or an attorney. As soon as the loan application has been granted, a title search should be ordered and the order followed up to make certain that the search is completed as soon as possible.

fied as should the borrower. Arrangements should be to go to the Title Company or to the Attorney's office. When the title has been searched and the mortgage papers are ready for signing, the lender should be notimade for the parties who are to sign the mortgage papers Speed in closing a loan is largely a matter of attention to Other material that will be helpful, if it accompanies

cated. b—Survey of lot, or plot. c—Photograph of property.

Builder or Owner should: Get approval of loan with definite understanding as to unt, interest rate, term of loan, how payable, and ex-

penses of loan.

2 Order title search or policy, and follow it through to see that it is prepared promptly.

3 Ascertain when mortgage papers are ready to sign, and have necessary parties on hand for signing.

4 In case of construction loan, arrange with lender, a mutually agreeable schedule of payments to be made to builder or owner, as construction work progresses.

5 Find out from lender, where and to whom payments of interest, or principal shall be made.

1—Search title
2—Make judgment and tax search
3—Prepare note or bond, and mortgage.
4—See that papers are properly signed and acknowledged.
5—File mortgage, and turn over note or bond to lender, upon receipt of funds.
6—See to distribution of funds, collection of loan expenses, and render account statement to borrower.
7—Issue title certificate, or policy.

Speculative and Investment Building Profits

ERCHANT or speculative builders—those who erect buildings on their own account for immediate sale—have long suffered under the bad name given to their profession by unscrupulous organizations that are more popularly classed as "jerry builders."

use, whereas contractors may be compared to the manufacturers who build automobiles or furniture, or the tailors who make clothing only on special order and to the buyer's specifications. Merchant builders, however, are as essential to the welfare of the nation as the manufacturers of automobiles, furniture or readyfinished products which the man on the street can buy ready to made clothing, and it should be understood more generally that merchant builders resemble these manufacturers

Merchant builders will always exist and will always be important in the industry, for they satisfy the needs of that vast multitude of families that do not want to build for themselves because they cannot visualize the result from plans or specifications, or because they do not know what they want until they see the finished job. In short, merchant builders capitalize on the mystery of building as it appears to the average layman.

WHAT TO BUILD?

in this field is founded on very much the same principles as those followed so successfully by the manufacturers of other commodities. Take radios, for example. In the tremendous competition The major problem of the progressive merchant builder is not how to build but what to build, and this latter question depends in turn on what will sell or rent most readily. The secret of success turers are constantly endeavoring to produce receivers of better tion, for high priced radios are selling everyday along with low priced ones. There are markets for both. The competition is not for the dollars that will be spent each year for radios, manufacquality and greater convenience. Price is not the sole considerapriced ones. There are markets for both. The competition is no in price but in quality within various well-defined price ranges.

any given price range for the finished house, the problem is to give a little better quality, a little greater convenience or a little greater comfort than others that sell for approximately this same The same situation is true among merchant builders. Within

CAPITALIZING NATIONAL ADVERTISING

to create a demand for their products on the part of home owners through the force of national advertising and well-devised direct mail campaigns. They are helping the merchant builder who knows how to profit by the enormous sums of money spent annually in Manufacturers of building materials are constantly endeavoring such national advertising.

When a building product has been "sold" to the public, that product becomes a potential selling feature of any building in which it is used. To put this force at work, the builder must of necessity let his prospective buyers know that he has employed these popularly accepted products. This detail is too often overlooked—especially by sales and rental agents who cannot distinguish good construction from poor, or who are too superficial in their sales work to point out the merits of the construction the builder offers. One successful way of getting around this difficulty is to install small, neat placards in various parts of the house calling the syisitor's attention to the quality details of construction, whether finds they be hidden beneath the finish or visible upon the surface.

Of course, many quality materials are not susceptible of effective advertising and yet they, too, contribute to salability or rentability. The use of a good grade of lumber instead of inferior material, or the employment of steel in the hidden framework of a house adds definitely to the value and yet it employs products that cannot successfully be advertised by the manufacturer, or brought to the

NATIONAL BUILDERS CATALOG

attention of prospective buyers except by special efforts. Advertising alone is not a criterion of the value of the material. Rather it is recognition of the values on the part of the buyer. Practically all advertising is designed to enhance this recognition and, at the same time, it is designed to cultivate an appreciation of quality construction. The first and most appealing element that makes for salability or rentability is the impression of qualities superior to those offered by competing houses or apartments.

CREATING BUYER SATISFACTION

crease the tenant's personal satisfaction through comfort, convenience, beauty or economy. Modern plumbing equipment, convenience, beauty or economy. Modern plumining equipment, comvenient built-in cabinets, adequate wiring, economical and efficient heating plants, fine floors, beautiful doors and windows, a colorful and weather-tight roof; all these things have a direct appeal to The most obvious aids of salability are those things which inthe buyer, because they create personal satisfaction.

ing materials that increase profits through a quicker turnover of property. For example, a system of rigid conduit for radio wiring or telephone extensions may add from one hundred to one hundred and twenty-five dollars to the builder's cost and yet their added convenience, modernness and popularity may bring a price two or three hundred dollars higher than could otherwise be obtained. Similarly with tile walls in bathrooms, modern floors of pattern and color, weatherstripping and heat insulation; all these cost less than buyers will gladly pay. In the catalog pages of this book will be found many products which may be employed to add an extra margin of marketability to the buildings in which they are employed. They are all the products of progressive manufacturers who understand what the ninhic wants and who have achieved success in supplying this public wants and who have achieved success in supplying this demand. Price becomes a secondary consideration when purchas-

The reason for this may largely be attributed to the education of the public through intelligent advertising in the publications that reach actual and prospective home owners and through the publications that cover the trades.

NOVELTY ENHANCES MARKETABILITY

feature only in the lower price ranges where they are not always expected. Progressive merchant builders will find in the catalog pages of this book many of the latest developments in building products and equipment. The intelligent use of these new products will pay greater dividends today than a few years hence when the inexperience. As a result these builders are usually far less progressive than merchant builders, for the latter make capital out of new materials because of the selling power of novelties. Builders who first appreciated the value of ceramic tile walls in bathrooms, for example, profited by the popularity they enjoyed immediately after they were generally introduced. Today tile walls are a necessity in better homes, and are a competitive selling with new materials and types of equipment. They prefer to let the other fellow try out such materials rather than risk a loss through Conservative builders are frequently unwilling to experiment same items will be used by every competitor.

BUYING MATERIALS FOR MAXIMUM PROFITS

semi-finished materials, puts them together and either sells the finished product or is paid a profit for his work. The builder's cost is thus made up of the price of material, plus the price of labor, plus the cost of supervision and overhead, plus a margin of profit. The first price of the material alone is but one factor in determining the ultimate cost upon which the builder makes his Every builder is in a sense a manufacturer who buys raw and semi-finished materials, puts them together and either sells the profit.

The first consideration then in the purchase of any building product is "what will it cost in terms of labor and overhead to use

Frank statement as is being borrowed.

this material." It is possible to buy cheap lumber, for example, for perhaps ten or fifteen per cent less than first grade lumber. The cheap lumber may be warped, uneven on the edges, full of imperfections and so green that it is hard to saw or work. The actual labor cost of culling out the material too defective to use and of utilizing the balance, may actually be enough higher than the labor cost of working with good quality lumber to pay the difference in cost of the material and leave a little profit for the builder's pocketbook.

Studies of this type will reveal many instances where it is more profitable to pay a higher price for the material in order to reduce labor costs than to pay a low price for the material and spend part of the anticipated profits in costly delays, extra labor and expensive supervision.

Another way to spend money in order to make money is when the more expensive product adds to the salability or rentability of the finished building. This has been discussed in previous paragraphs at sufficient length to preclude any need for further development here.

New Products are Often Profitable

The competition among manufacturers of building products is largely based upon their constant search for items that will either reduce building costs or make for better buildings without proportionately greater expense. Every time a specialty comes into the market under the auspices of an experienced manufacturer, it challenges serious consideration because the manufacturer would not have the temerity to attempt its promotion unless he were convinced that it would take the place of some inferior material at a cost that would show a profit to the builder and owner. For this reason, those builders who are afraid to try something new and who apparently follow the axiom, "what was good enough for Grandfather is good enough for me," are very frequently missing profit-making opportunities by their failure to study and test the new materials that the better manufacturers are constantly producing.

BUY SERVICE!

Because of the increasing multiplicity of building materials and the difficulty with which the great mass of builders can absorb complete knowledge of modern products and methods, many manufacturers offer valuable services to builders who will take the trouble to make use of these facilities. These services range all the way from practical manuals describing the proper use and installation of new materials to actual field supervision by trained experts who will teach the builder's mechanics how to use the products most effectively and economically. This is one type of service which intelligent builders buy when they choose between competing products.

Another type of service takes the form of engineering aids in designing, planning or the solution of structural or equipment problems. This service is usually free or is rendered at such nominal cost as to be cheaper than equivalent effort on the part of the builder himself.

Still another type of service that should influence intelligent buying is expressed in ample stocks and prompt deliveries. Construction delays are inevitably costly. Manufacturers who promise deliveries according to the builder's progress schedule and fail to deliver their materials at the time designated add to the builder's cost and correspondingly impair his profits.

The same statement holds true for dealers with whom the builder trades. Progressive dealers are able to assist their contractor customers in many ways. When they take on a new line

NATIONAL BUILDERS CATALOG

of materials, their salesmen are trained by the manufacturer in the proper use of these items. This training they are ready to pass on to the builder for his own benefit. In addition, progressive dealers are aware of the importance of prompt deliveries according to schedule. They not only maintain adequate stocks, but they follow up the delivery of orders with exceeding care. Trading with a progressive dealer who understands the builder's problems is sound policy for every builder.

INTELLIGENT BUYING

Thus intelligent buying becomes far more than a mere matter of comparing prices and choosing the lowest. It involves an appraisal of services, of labor costs, of deliveries and of extra items of labor or materials that are required to complete the installation. One of the chief values of the National Builders Catalog is that its pages reveal to the builder much information which he can use to guide him in his intelligent buying of materials.

STUDYING PLANS

We have already referred to the importance of incorporating practical and novel selling features which add to the comfort, utility or beauty of the house which is being built for resale at a profit.

There is another factor which is naturally of tremendous importance and still it too seldom receives proper consideration. This is the matter of planning houses so that they will offer maximum efficiency both in communication and in the saving of space. It is quite true that merchant builders have led the way in the use of ingenuity of plan. Primarily this has been the work of architects which has then been adapted by many merchant builders for plans of their own use, particularly where special features seemed to appeal to the buying public.

There will be found in following sections of this book a collection of illustrations of moderate cost dwellings which offer many ingenious features and which are well worth the time that the contractor might spend in studying them. It will probably be found that some of these houses are adaptable for individual needs and as the complete plans and specifications are available at moderate cost, a distinct saving in time and money is made possible.

There is another type of building for profit which does not require waiting for houses to be built before they are sold. It is operated through selling houses from stock plans. This method of profit making has been employed in every section of the country and in one sense is the most successful method because if the contractor estimates his work properly he is assured of a profit when he receives the order to build the house.

This plan section of this book is one which has been employed by contractors for several years with prospective customers. Various features of planning can be discussed. It is also important to realize that the manufacturers' pages will serve to demonstrate the use of many types of material and equipment, explaining them perhaps more easily and convincingly than is possible through the average non-illustrated conversation.

Again this Catalog demonstrates its convenience by having so much information gathered together within two covers and the contractor can employ it to good advantage in his discussions of financing, planning and equipping the home or some other type of building in which his customer may be interested.

NATIONAL BUILDERS CATALOG can always be found with no waste of time, which is often not the case of individual catalogs and other types of literature issued by manufacturers. The habit of using NATIONAL BUILDERS CATALOG will save the contractor and dealer much time in many ways.

How Dealers Can Profit By Using This Catalog

HERE are a number of ways in which the dealer can use National Builders Catalog to his own advantage. The first step is to examine the book thoroughly from cover to cover to find out what information it contains and how it is arranged, because here is a working tool for the dealer which he can use not only to gain information for himself but to give information to contractors, prospective owners, to architects and to his own salesmen. Perhaps the best way to take up this subject will be to discuss the possible uses of the book with these various types of individuals who influence the dealer's business.

Working WITH THE CONTRACTOR

In National Builders Catalog there are four general divisions of information which are of direct interest to the contractor. First is the editorial section which is given over to an extensive discussion of methods through which contractors can add to their profits and helpful information on such subjects as financing. This reference material furnishes a certain amount of data which can be used by the dealer in his discussions with contractors to show clearly the relationship of the contractor, the architect and the dealer during various stages of a building project.

Following this section are complete descriptions of a large

Following this section are complete descriptions of a large number of building materials, types of equipment and specialties of various kinds which are used for the construction of dwellings and other types of structures. When the dealer is discussing materials and methods with the contractor he will find the Catalog to be a handy reference book. In general the use of individual products is completely described so that full information is available with no waste of time. It is apparent, therefore, that the Catalog contains information which directly pertains to the contractor's business and the use of this book will often facilitate discussions by providing the specific information which may be wanted at the minute.

Another and very important part of this book is the plan section where plans and illustrations are presented of 64 typical moderate cost houses for which working drawings and specifications are available. The Catalog can be used in discussing plans with contractors or in helping contractors or merchant builders to find types of houses or ideas which may appeal to them or to their customers. Many dealers have found in past years that the use of the plans in the Catalog have been of particular value in building closer relationships with contractors by making this material available to those who do not possess it.

Working With Prospective Owners

Owing to the rapid development of merchandising activity which is taking place in the dealer field it is obvious that the dealer more and more will be called on to provide information for those who are intending to build. It is but natural that the dealer should set himself up in the community as headquarters for information on materials and equipment and in doing so he is naturally expected to know something about plans and about financing, both of which must come before a bill of materials can be ordered.

must come before a bill of materials can be ordered.

NATIONAL BUILDERS CATALOG is well adapted for use in situations of this kind. For instance, in cases where prospective home builders visit the dealer or the dealer goes out for business he has enough data in the Catalog, including plans and descriptions of materials and equipment, to definitely interest his prospect. Thus in a sense the Catalog becomes a guide covering discussions of this nature and instead of having to seek a collection of literature the dealer can point out various interesting features and methods of planning, equipping and financing so that the prospective owner will have some information on which to base his decisions.

There are three ways in which a bill of materials for a building job gets to the dealer. The first is the case where an architect designs a building and the contractor brings the dealer his specifications and list of quantities of those products which the dealer handles. The specifications may call for certain types of products or certain specialties which the dealer does not handle but by referring to this Catalog he can find out who the manufacturers are and the necessary details about the products themselves.

Again there is the type of project in which the architect does not function but for which the contractor or the speculative builder has developed his own plans or is using stock plans. In cases like these the specifications are often not much more than outlined and the dealer may be called upon to suggest products, types of equipment, etc., which may be suitable for the job. The Catalog will save him considerable time in this type of project.

Another class of business comes to some dealers directly from owners. For instance, the prospective builder of a moderate cost home will come to him for information and advice.

There are several basic subjects which interest the owner and the order of their importance is somewhat difficult to arrange. These subjects include planning, cost, financing and the materials and equipment which are to be used in the house. National Bullders Catalog gives extensive information on each of these subjects and this information is conveniently arranged so that it is easy to present as a service to the prospective owner. The discussion of plans is facilitated by looking over those shown in the Catalog and by realizing that many other plans are available through the same source. It is also important to realize that a service is operated in connection with these plans so that any desired changes can be made and incorporated in the working drawings and specifications which are available at nominal cost. The questions involved in selecting materials and equipment can be solved in many instances through the Catalog pages where many valuable suggestions will be found, together with a clear exposition of the use of the various products presented for consideration.

Working WITH THE ARCHITECT

It has not been the custom of dealers to work with architects but a considerable change is taking place along this line. The reason for this change is that many dealers are adding various types of specialties and in doing so salesmanship must be developed. The Catalog offers for consideration many of the modern specialties which add to the comfort, convenience and beauty of the building. As the dealer takes on more specialties, it becomes more imperative that he cultivate the architect. The Catalog can be used in developing such contacts and it is in a more convenient form than a collection of miscellaneous literature.

FOR HIMSELF AND HIS SALESMEN

From the dealer's own point of view the pages of NATIONAL BUILDERS CATALOG offer valuable information on several important divisions of his business. The first of these is based on the fact that the dealer should know something about the business side of construction of all kinds. He should possess a fund of information along the lines of marketable types of dwellings and other structures which are built for resale. He should have a good knowledge of financing methods and current sources of mortgage money in his own locality. He should have a well developed understanding of the modern elements of comfort and convenience which prospective owners require. In National Builders Catalog will be found a large amount of information covering these various subjects and consequently this book is of great educational value to the dealer.

For dealers who are developing their business to include profitable specialties this Catalog offers a great many valuable suggestions. Here is a compact reference book which presents many types of products which the dealer does not handle. By studying the local possibilities of these products the dealer may find a way to increase his line, which is one of the few available ways in which the dealer of today can expand his business and make it more profitable.

Again NATIONAL BUILDERS CATALOG will be found of value in discussions of the products the dealer handles—whether these discussions are with contractors, owners or architects. Manufacturers have described the use of their products in the following pages in such a manner that all pertinent questions are answered. For those dealers who employ salesmen the Catalog has obvious advantages. It can be used by the salesmen as a working tool for all of the purposes which have been outlined here for the dealer.

ALPHA PORTLAND CEMEN

Manufactured by ALPHA PORTLAND CEMENT CO.

BATTLE CREEK, MICH. EASTON, PA. Ваглиоке, Мр. Снісасо, Ігі. Рипарегрнія, Ра.

BIRMINGHAM, ALA. IRONTON, OHIO PITTSBURGH,

Boston, Mass. New York, N. Y. Sr. Louis, Mo.

ALPHA CEMENT, made only in one grade than meet standard specifications adopted by the American Society for Testing Materials, and approved by The one product of the Alpha Portland Cement Comthe American Engineering Standards Committee. and sold always on the guarantee that it will

ALPHA CEMENT is one of the oldest American sacks (see illustration at right), carrying 94 pounds net -approximately one cubic foot of actual cement-but also in paper containers or in bulk carload shipments without containers. be supplied

CEMENT

B4 LBE NET ?

PORTLAND

ALPH

brands and won its reputation in the days when foreign-ALPHA CEMENT is one of the oldest American made cements were used generally in America because

Standard sack of Alpha Cement, con-taining 94 lbs, net.

of supposed superior quality. Hourly tests during manufacturing process insure uniform Alpha quality.

improvement calling for a high-grade Portland Cement. The requisites are simple—that it be thoroughly mixed with proper ALPHA CEMENT will give the best results in every type of crushed stone, gravel or pebbles, slag, or other approved coarse ALPHA CEMENT improvements, proportions of water and suitable aggregates-clean sand and All cement improvements should be reinforced at



They can be made rust-

much

have

or

rat-proof, rot-proof,

water-proof.

in the mortar. "Tile-red" floors the use of suitable coloring matter Colored floors in the style of tile may be had for sun parlor and porch at minimum expense.

page, gives formulas for obtaining these color effects, whether for walls of house or for porches, walks, gate-posts, etc. Alpha Ce-Ment stucco mortar is applied directly to the surface of coarsely finished cement block with satisfying results. Such an exterior very popular. The Alpha Cement Handbook, illustrated on this for sun parlors and porches are looks well and requires no painting.

Tables for Use of Alpha Cement
In addition to the table shown at the bottom of this page, the

Various Mixtures and Thickn Materials Required for 100 Square Feet of Sidewalks and Floors-for

		S	:	:	:	:	_	_	_		
	1:21/3:5	Sand	:	:	:		0.43	0.57	0.71	0.86	
		Stone* Cement		• • • • • • • • • • • • • • • • • • • •			4.6	6.2	7.7	9.2	ď
		Stone*		:			0.77	1.02	1.27	1.53	this water
Course	1:21/2:4	ent Sand				:	0.48	0.64	0.80	0.95	ther in or
Base		Cement		: : : : :			5.2	6.9	8.6	10.3	COGANAGE
	_	Stone*					0.72	0.95	1,19	1.43	die cache
	1:2:3	-		•		-	0.48	0.64	0.80	96.0	200000000
		Cement					6.5	8.6	10.8	12.9	Our item of Armer Courses and account in colors arrespond to rights world
Ī	2	Sand	0.15	0.29	0.43	0.58					Suns o
Course	1:2	Cement	2.0	3.9	5.9	7.9					A 2:
Wearing Course	72		0.13	0.26	0.40	0.53					O
	1:1/2	Cement Sand	2.4	4.8	7.2	9.6					
2000	Irse	hes									

Quantities of ALFHA CEMENT are expressed in sters, aggregates in cubic yards. *The word Stone is used to mean screened gravel (pebbles) as well as broken stone.

NATIONAL BUILDERS CATALOG

ALPHA CEMENT literature contains many other useful ables.

Directions for Placing a Stucco Coat

the stucco. Apply the stucco continuously in one direction, and do not let the edges dry up. Work stucco thoroughly with water, but let drain off before applying coats only to the extent that is absolutely necessary. Keep mortar coats wet for several days. Apply water as soon as each coat has hardened enough so that it coats have been cured for at least one week. Use only wood float to prepare the finish coat for final surface will not wash. Apply the finish coat only after previous Drench the masonry and cement block finishing.

Alpha Cement Literature

isterns, well caps, posts, pools, etc. Prominent in the list of signs for scores of permanent and handsome improvements made orches, retaining walls, driveways, storage cellars, garages, yard urniture, tennis courts, culverts and drains, septic tanks, hotbeds, Alpha Cement Dealers in nearly all populous communities vill be pleased to supply contractors and property-owners with These show depossible through the use of Alpha Cement, such as steps, variety of literature and Service Sheets.





Two examples of many surface suggestions easily obtainable with Alpha Cement. Floated rough cast finish Torn float finish

most approved methods of building. If the reader doesn't know a nearby Alpha Cement Dealer, he should write direct to the Alpha ng 112 freely illustrated pages, suggesting good plans and the ement Company's nearest office for a copy of this practical literature is the valuable Handbook shown on this page, contain-Handbook.

Агрна methods of securing high early-Special pamphlet on concrete with strength

CEMENT of standard quality also ree on request.

MOH.						10000		
(KF (-56/12)))	10.4	200			anor a		and the same	33.
			Stone*	•			0.86	1.43

The Alpha Cement Handbook

EDISON PORTLAND CEMENT

Made by EDISON PORTLAND CEMENT CO.

250 Stuart St., Boston, Mass.

261 Fifth Ave., NEW YORK

20 S. 15th St., PHILADELPHIA, PA.

All Edison Portland Cement is Ghomas a Edison, produced in one mill located at New Vilhigh quality and has met every specification of the American Society for Testing Materials before, as well as after, the specifications have been adopted. Epison Cement may be bought in either paper or cloth bags. All Edison Portland Cement is lage, N. J. It is a cement of uniformly

Preparing the Mix

At all times the aggregates-sand and stone-should be clean and well graded. It is best to use the same measure throughout the job, so that the proportions of the different foundation walls, floors, sidewalks, driveways, steps and curbs. In the table below will be found mixtures and maximum size stone for various types of concrete work. Whenever Portland Cement can be used, Edison will be found safe and satisfactory. It is ideal for stucco,

Tables of Mixtures and Maximum Size Stone

Stone	34%		200	1 1/2
200	:		pave-	:
	:		floors,	
	Wearing course of two-course pavements		One-course walks, porch and basement floors, pave-	
	urse p		and	
	00-0M		porch	
	arse of t		walks,	steps
for	00	for	rse	and
1:11/2 Mixture for:	Wearing	3.3 Mixture for:	One-con	ments
:11/2		.:3		

Foundations for farm machinery..... Wells and cisterns, watering troughs, tanks..... Basement walls exposed to moisture..... Mixture for: 1:2:4

Concrete work in general..... Coal bins, grain bins, silo walls, and such.....1½" Mixture for:

Building walls above ground..11/2" Walls of pit or basements11/2" Base of two-course floor or pavement

Mixture for: Mortar

and pavements. 14" lower boxes.... 14" Wearing course of two-course walks, floors Flower boxes....

Manufacturing Standards

Edison. Vigilant chemical control at the mill is backed up by the work of an independent laboratory which confive largest in the country. Limiting production to one large mill means that the cement is always uniform. All the raw materials go through the The Edison mill is, from a standpoint of productive capacity, one of the same machinery—much of it the invention of Thomas A.

Service

stantly samples, tests and analyzes the cement to check

against the results obtained by the Edison staff.

tive in your territory. He has the best facilities to give quick service. Supporting him are the large storage bins and silos, and modern bagging and shipping equipment at Orders given at the mill are filled ordinarily tral location of the mill gives fast and direct freight routes to all points in New England and the Middle Atlantic The building material dealer is the Edison representawithin 24 hours—a feature of Edison service. the mill.

Edison in Construction

Stadium, New York City; Traymore Hotel, Atlantic City, N. J.; Capitol Theatre, New York City; E. F. Albee Theatre, Brooklyn, N. Y.; U. S. Shoe Machinery Co., Beverly, Mass.; The Shandaken Tunnel, Shandaken, N. Y.; Bond Electric Corp., Jersey City, N. J.; Soldiers Following are a few large and well known enterprises in which Edison Portland Cement has been used to give strength and permanency to the concrete work: Yankee

SON PORTLAND CEMENT STUCCO

material required for con-

you information

creting a given surface

of established depth.

will be glad to furnish

Our Service Department

Information

Further

Memorial

Sailors

Bridge at Harrisburg, Pa.

advantages of concrete in

modern home construction, including methods of

new series of folders covering the practical uses and

repair work, will be sent

free on request.

waterproofing cellars and

SMOKE CHAMBERS AND DAMPERS

Manufactured by COLONIAL FIREPLACE COMPANY

4652 Roosevelt Road, CHICAGO, ILL.

THE COLONIAL ADJUSTABLE CAST-IRON SMOKE CHAMBER AND COLONIAL DAMPER; VICTOR ELECTRIC HEATING FIREPLACE UNIT.

OTHER PRODUCTS: Everything for the fireplace—grates, fenders, hoods, andirons, fire sets,

CAST-IRON CAST-IRON

FRONT

screens, etc

The Colonial Adjustable Cast-Iron Smoke Chamber

Smoke Chamber Form. The throat and smoke chamber, vital parts of a successful fireplace, are formed quickly and correctly with the Colonial Damper and the Colonial

Study the illustration carefully. Notice that the cast-iron smoke chamber is adjustable, interocking, rigid, strong—suitable for every type of

The forming smoothly and easily of the slanting is inside front from damper throat to flue lining is an exclusive feature of the Colonial Smoke Cham-

cost in labor, and assures a properly formed, smooth interior of the smoke chamber so necessary for the proper functioning of a fireplace. It can be set in two minutes. Saves half its

The Colonial Damper, Perfect Draft

throat. Standard in most specifications—Insist on it for the home you are building and avoid Compels correct formation of the fireplace

the mistakes that ruin a fireplace.

Style G Colonial Damper may be set 1, 2, 3 or more courses of brick above the fireplace opening—the only damper with which this is possible. The best fireplace design requires the damper set high to secure proper draft and avoid smoking.

Sizes of the Colonial Damper

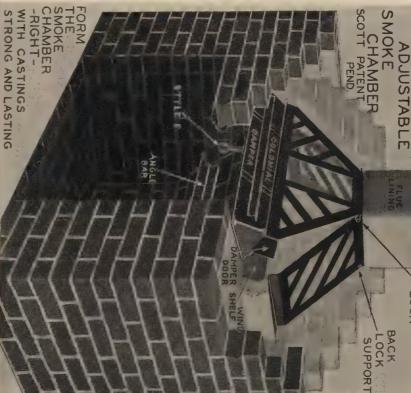
No.	Code	Fireplace Opening	Proper Size of Flue	Wt. Crate Singly
0.	Count	to 23	X 8 1	
No. O	Duke	24 to 28 in.	ox sin.	35 lbs.
No. 1	Prince	to 32	x 12 i	_
No. 1-A	Valet	to 35	x 12 i	_
No. 2	Regent	to 38	x 12	_
No. 2-A	Butler	to 41	x 16	_
No. 3	Queen	to 44	x 16 i	_
No. 3-A	Page	to 47	x 16 i	
Zo. 4	King	to 51	x 12 i	_
No. 5	Rex	to 57	x 12	_
No. 6	Czar	to 64	x 16 i	_
No. 7	Earl	to 72	x 16 i	_

Victor Electric Heating Fireplace Unit

base, facing, grate, "Globar" Electrical Heating Unit, Lamps, Flicker Fans and imitation coals. Sets against the wall like a piece of furniture. Connects to base outlet. For fireplaces without flues. Includes mantel

warmth for chilly days. Pleasing center of decorative scheme. Clean, odorless, low in cost of operation. Three-point switch gives the effect of flickering hard coal fire with or without heat. Ventilates scientifically as well as heats. Comes in variety of reautiful mantel designs. and beautiful. Affords adequate

NATIONAL BUILDERS CATALOG



Sizes of Cast-Iron Smoke Chamber Form

SZZZ	I
130 236 342 448	
NAMA NAMA	
openings openings openings openings	
46 36	
5555	
544	
inches inches inches inches	
wide wide wide wide	
with with with	
ZZZZ	١
4000	1
2 2 2 3	1
53.A A	
Colonial Colonial Colonial Colonial	
Damper Damper Damper Damper Damper	Part and the last



THE BEAUFORT VICTOR
A type of French mantel with rococco effects in
the ornamentation. Length of shelf: 60". Width
of shelf: 1334". Width of body: 5434". Height:
49". Primed White, Walnut or Mahogany finish.

Helpful Literature FREE

We partic Colonial Fireplace Company is headquarters for fireplace information. Write for literature that

We particularly suggest in-quiries for folders descriptive of Electric Heating Grates—grates that fit any fireplace—grates that really heat—grates that provide either coal fire or "Log Fire" ef-fect. The "Log Fire" grate gives the realistic appearance of crack-ling hardwood logs.

Special Service to Home Owners and Contractors

As experts for a quarter of a century in all types of fireplace design and construction you can freely write us regarding any fireplace problem including construction details, design, materials, flue areas, chimney heights, etc.

DONLEY BUIL DING SPECIALTIES

Made by THE DONLEY BROTHERS CO.

13923 Miles Avenue, CLEVELAND, O.

WINDOWS (Stee!), CLEAR (Win-CLOTHES POSTS (Metal), COAL CHUTES (Win-dow and Grade Line), DAMPERS, ELECTRIC DAVES FIRE BASKETS, GARBAGE RECEIVERS, P DUMPS, BASEMENT COLUMNS, BASEMENT Boxes, Fire Baskets, Garbage Receivers and Mail Receivers. Donley Devices include Andirons, Ash PACKAGE METER

Fireplaces having Width of Opening

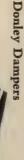
Rotary Control Damper No.

Dimensions of Donley Dampers Poker Control Damper No.

linch to 30 inch inch to 36 inch inch to 42 inch inch inch inch

224 236 236 242 248 254 260 272

324 330 336 342 348 348 354 372





moulding. Lights bedded on cork, held in place by

reinforced with steel angles.

This chute has body of rust-resisting copper steel inforced with steel angles. Frame of copper steel

Donley Coal Chute No. 48

Note: The width of the size of damper corresponds width of the finished fireplace opening. If the width is between size, use next larger size of damper.

to the

spring clips, no putty.

Donley Catalog lists oundation Wall

Rotary Control—This damper has a knob protruding through the mantel front which is rotated to open or close the damper. Diagram below shows the mechanism. Disfoundation Wall Chutes, Grade Line Chutes and Store Chutes. Wall Chutes

flange to center line of opening is 1½ inches. tance from under side of front



in single panel glass, also solid metal doors.

and pushing or pulling until the desired position is reached. The ring projects 5" below the at right shows how this damper is controlled by hooking an ordinary poker into the Poker Control—The diagram ring

Poker Control

flange of the damper.

ful smoke-proof fireplace are attached to each damper crate. More detailed information is to be found in the Donley Note: - Complete directions for building a success-Book of Successful Fireplaces described

Description of Donley Wall Coal Chutes

Catalog described be-

tions send for Donley For complete descrip-

Honner ontional on the chutes marked with ()	Solid doorGlass door, one light	Solid steel door. Solid steel door. Solid steel door. Glass door, one light. Glass door, three lights.	Description	
tes marker	32x22 32x22	24x17 24x17 24x17 24x17	Wall opening,	
d with (*)		NNO. 29 0. 39	Straight body for 9-in.	
	No. 613 No. 713	No. 213* No. 313* Straight	Slanted bottom body for 13-in. wall	
	No. 617* No. 717*		Slanted Slanted bottom bottom body for 13-in. wall 17-in. wall	

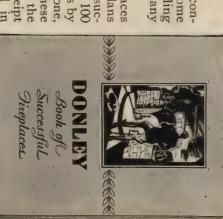
Honner ontional on the chutes marked with ()	Solid steel door. Solid steel door. Glass door, one light. Glass door, three lights. Solid door.	Description
n the chutes mark	24x17 24x17 24x17 24x17 32x22 32x22	0
ad with (*)	NNO. 19	Straight body for 9-in.
	No. 213* No. 313* Straight body No. 613 No. 713	Slanted bottom body for 13-in. wall
	No. 617*	Slanted bottom body for 13-in. wall 17-in. wall



Send For These Books

others. It is sent free upon request. Comfort and Convenience Devices including items listed at the top of this page and many The Donley Catalog shown at the left contains complete descriptions of Donley Home

shown at the right contains complete plans and details for constructing a smoke-proof sucmaterials. Fireplaces for every room in the house. A copy of this book sent upon receipt of 25c—35c west of the Mississippi and in wood, marble, tile cessful fireplace. It also illustrates over 100 fireplace designs that may be used as guides by the builder. These designs are in brick, stone, wood, marble, tile and combinations of these The Donley Book of Successful Fireplaces



(REPLACE UNIT HEATILATOR F

Made by HEATILATOR COMPANY

SYRACUSE, N. Y.

Heatilator Fireplace Comfort

Fireplace Unit Heati more than doubles heat. It will assure you of a firethe Heatilator Fireplace burns without smoke and place that meets your ideals of comfort and cheerfulcrackling logs and glowing embers, brings added enjoyment and comfort if you build The charm of an open fire, with its your fireplace around the Heatilator. For



An Attractive Heatilator Fireplace Intake and outlet openings can be seen in the ends of the mantel.

General Appearance of Fireplace Unchanged

The Heatilator Fireplace Unit is a metal form around which the masonry is built. Its scientific design is proven proportioned firebox, damper, down draft shelf and smoke dome. Yet it does not affect the design of the mantel nor complete from floor to chimney flue including correctly limit your selection of masonry. Brick, stone, tile or stucco can be used as preferred. Specify the Heatilator Fireplace Unit and assure a usable, economical, satisfacsuccessful by thousands of installations. tory fireplace.

Circulates Warm Air Like a Furnace

double wall heating chamber around the fire box. Cold air is drawn into this heating chamber surrounding the and mountain cabins, the Heatilator Fireplace may be The Heatilator's furnace-like heat comes from the running the main heating plant for a month or two every spring and fall. For southern homes, summer cottages relied upon as the only source of heat, often lengthening new circulating heat will save the trouble and expense of the camping season by many weeks.

NATIONAL BUILDERS CATALOG

More Heat by Actual Test

rate the entire volume of air in a large living room would circulate through the Heatilator two Anemometer tests show that the 34-H Heatilator with a moderate wood fire produces 100 cu. ft. of air per minute. At this Temperature of this heated air coming from the outlets is 200° to 300° F. according or three times an hour. to intensity of the fire. ator

Saves Labor and Materials

The Heatilator is not an addition to the fireplace—it The Heatilator saves cost of firebrick, damper, and smoke chamber as well as labor in When these savings are figured, the cost is little more correctly forming the firebox, dome and down draft shelf. than the ordinary installation. is the fireplace itself.

The Heatilator Guarantee

The Heatilator purchase is not complete until the plete satisfaction after being properly installed and tried owner is fully satisfied. Full purchase price will be refunded plus up to \$20 to cover cost of removal and reshipment of any Heatilator which does not give comout.



A typical Heatilator Fireplace with grilled outlet openings located high above the mantel.

You Can Inspect Without Risk or Expense

When you build a fireplace you pay for Heatilator advantages. Why not enjoy them? Ask your building tion and approval on arrival. No obligation to you or supply dealer to order a Unit for you subject to inspecyour dealer.

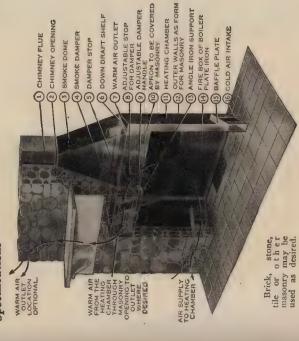
A Wide Range of Sizes

Price	1	=	-	58.00	т.	-	в
Weight Lbs.	175	200	235	285	340	465	200
Fuel Capacity Inches	up to 15	up to 18	up to 20	up to 28	up to 30	up to 33	110 40 30
Opening Height Inches	100	24	23	26	27%	30%	54
Finished Width Inches	17	23	27	33	37	42	48
No.	18H	24H	28H	34H	39H	44H	HOY

Freight, allowed east of Mississippi River on shipments from Syracuse, New York: Prices west of Mississippi f. o. b. nearest warchouse point. All warchouse deliveries f. o. b. warchouse. Details of Special 74-H Unit on request.

35 1/4

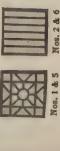
Specifications

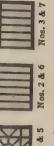


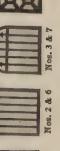
The inner shell forming the firebox is made of copperoid boiler plate iron, $\frac{3}{16}$ " plate on smaller sizes, $\frac{3}{96}$ " plate on larger units. Down draft shelf and smoke dome walls, which serve as forms for the permanent masonry, are of 14 ga. copperoid iron. All seams are electrically welded. Simple positive poker control for the The outside and damper eliminates fixtures in the mantel. damper are also of the same material.

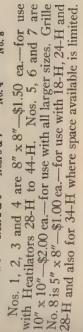
Decorative Grilles or Registers

Five decorative grilles designed especially for use with the Heatilator Fireplace. Made of oxidized cast iron with exception of No. 4 which is hand-molded clay tile.





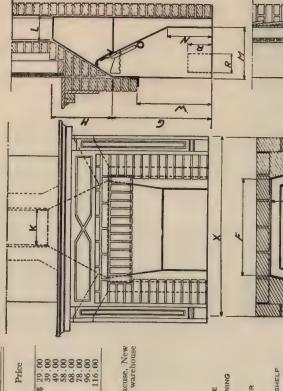




Arch and Angle Supports

Supports for the masonry above the fireplace opening can be furnished if specified. Angle iron or arch support

General Installation Plan



Model	A	M	<u>၂</u>	2	H	4	0	H	K	ר	M	Z	×	_
18-H	18	3	24	15	15	20	24	12	oc	oc	12	12	9	oc -
_	24	3	30	90	16	20	31	9	000	000	1 10	25) a	270
-	28	3	34	18	20	24	32	20	12	000	24	14	0 00	250
34-H	34 1/2	3	401/2	20	27	32	33 1/2	20	12	00	17	15	000	200
-	39	4	47	22	30	36	36	24	16	00	000	162%	000	27
	44	N)	54	24	3.2	40	42	24	16	200	10	200	2 00	30
_	50	9	62	26	37	4.5	44	30	10	12	20	200	÷	3 %
_	62	00	78	28	44	32	48	36	16	12	22	22	10	35

HEATILATOR Dimensions (Inches)

If special assistance with your Heatilator Fireplace Plans is desired our Engineering Dept. is at your service—no obligation.

Heatilator Fireplace Basket

available on order. 18" and 24"—\$1.00; 28"—\$1.25; 34" and 39"—\$1.50; 44"—\$3.00; 50"—\$4.00; 62"—\$5.00.



cient for burning coal, coke or wood in the Heatilator by poker control. Dumps ashes quickly without handling. Basket size 32" long, 15" wide, 111/2" high for use with Units 34-H and 39-H. An attractive cast iron fireplace basket, especially effi-Fireplace. Has two sets of shaker grates—easily operated

Basket No. 234-Wgt. 81 lbs., \$14.90

ART STONE MANTELS

Manufactured by JACOBSON MANTEL & ORNAMENT CO. LIGNOID COMPO ORNAMENTS

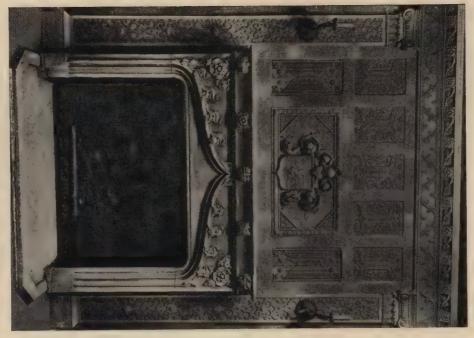
322 East 44th Street, New York, N. Y.

ARTHUR P. WINDOLPH

Products

perious. JACOBSON ART STONE MANTELS in all architectural

nices, lighting fixtures, grilles, panel moulding, etc. wood-carving for over-mantel decorations, window cor-JACOBSON LIGNOID COMPO ORNAMENTS in place of



An Authentic Reproduction of an Old English Room, Showing Compo Ornaments on Woodwork, and an Art Stone Mantelpiece

General Information

To be truly effective, the mantel must be well designed and carefully made. ART STONE MANTELS are exact reevery respect but cost and age. productions of costly antiques and museum pieces in The fireplace is more popular today than ever before

LIGNOID COMPO ORNAMENTS are cast from genuine wood carvings to catch the exact technique of the original. They may be painted or stained. A large assortment carried in stock; special designs may be made by combining

Advantages

ART STONE MANTELS are in every way the equal of natural stone. In texture, color, durability, beauty, finish and even in "feel" they cannot be told from the original. Thus, at very modest cost, exquisitely carved mantels made to individual specifications. are carried in stock as well as many modern ones. as the originals. can be enjoyed-—as lovely, as strong and as distinguished s. Hundreds of very fine period designs stock as well as many modern ones. Also

of the wood when applied. Grinling Gibbons and other master-carvers. They can-not be detected from genuine wood-carvings—are much course, much less expensive. Become a permanent part more effective than ordinary wood-carvings and, of LIGNOID ORNAMENTS adhere to the finest examples of

How Used

Mantels at very reasonable cost and with no special Any tile setter or plasterer can install Art Stone

materials or equipment.

Painters or carpenters can apply Lignoid Compo, by placing on raw wood with hot glue while still pliable. Ories as part of the wood.

Naturally, ART STONE MANTELS cost less than the genuine originals, which they so exactly reproduce. But they also cost less than ordinary mantels which in no way can compare with either the beauty or durability of ART STONE. The same is true of LIGNOID COMPO ORNAMENTS.

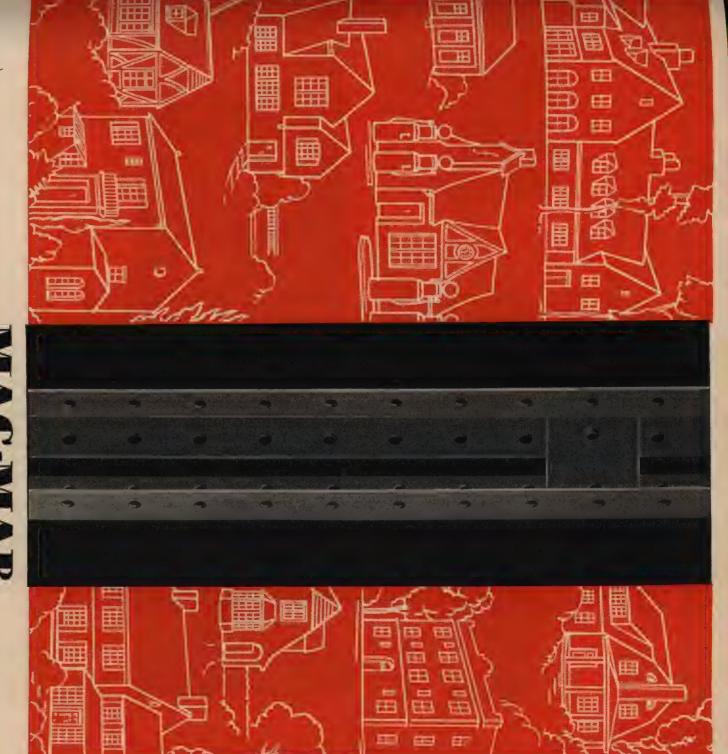
Both Art Stone Mantels and Lignoid Compo Or-NAMENTS are widely used by architects and builders and are now in thousands of homes, small and large. Names of installations near you gladly sent on request.



A Grille With a Modern Tendency

Additional Information

upon request. Please mention whether you are interested in Art Stone Mantels or Lignoid Compo Ornaments. Booklets and folders, profusely illustrated gladly sent



low to build with



steel according to

structural

EEL FRAMING

Made by STEEL FRAME HOUSE COMPANY

MAC-MAR ST

A Subsidiary of McClintic-Marshall Corporation PENNSYLVANIA Distributors in all Principal Centers PITTSBURGH,

other buildings, including all structural ele-MAC-MAR STEEL FRAMING for homes and ments, attachment devices, etc.

Partitions for fireproof buildings; Mac-Mar Mac-Mar OTHER PRODUCTS: Mac-Mar Steel Stud Junior Trusses (steel joists); Brisbane Steel Frame Cottages and Mac-Mar Poster Panels. Standardized Steel Garages;





Fig. 1. Mac-Mar Steel Framing for a house in Indianapolis Frederick Wallick, Architect.

General Information

Any builder familiar with standard methods of fram ing structures in wood can erect Mac-Mar Steel Framing. This modern system of construction employs rigid floor beams and rafters, each member corresponding to a similar member of wood in ordinary frame buildings. The members are bolted together on the job and the contractor merely substitutes a wrench and screw-driver durable steel for sills, studs, girts, and plates, and for for hammer, square, rule

All parts of Mac-Mar cated to fit the structure Steel Framing are fabridered. No cutting or fitfor which they are orting on the job. and saw.

The special feature Steel Framing is the use of members perforated distinguishing Mac-Mar on 2" centers (sills, girts, plates and studs), per-

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ard building materials by means of laboroffsets if necessary. Furthermore, all studs are normally assembled on 16" centers, permitting the use and attachment of all standmitting absolute flexibility of design to any multiple of 2" for allover dimensions. Fractional dimensions can be provided by special saving clips fitting the perforated members.

Fig. 4. Tydol Chain gasoline filling station with a Mac-Mar Steel Frame. One of many similar stations ordered by the Tidewater Oil Company.



Fig. 2. Same house finished. Mac-Mar Steel Framing fits any architectural style.

tion of any building three stories or less in height, having with a structural steel frame. It is particularly adapted live floor loads not exceeding 100-lbs. per square foot. It may be employed for taller buildings in conjunction apartment houses, and for club-houses, small hospitals Mac-Mar Steel Framing is adapted for the constructo homes and residences of all types and sizes. It is equally suited for the development of small, fireproof

and schools, small gaing is rigid, durable, nonrages, gasoline filling stations, one- to three-story Mac-Mar Steel Framtax-payer buildings, and all other structures which have usually been framed combustible, and obviously cannot be attacked by termites, rot, fungus, in wood.

Fig. 3. Complete Mac-Mar Steel Frame ready to ship.

or vermin. It produces a

substantial fireproof con-

Continued on next page

struction at low cost. It is free from warping, twisting, shrinkage, and thus assures freedom from plaster cracks

A. S. T. M. standards. All members are further protected after fabrication with a coat of anti-corrosive paint rolled, open hearth, due to structural causes. Mac-Mar Steel Framing pro-

for Residences and Other Buildings MAC-MAR STEEL FRAMING

= MAC-MAR STEEL FRAMING





Mac-Mar Steel Frame for a house at Syracuse, N. Y.

Mac-Mar Steel Framing because more steel is used than for steel. More than adequate strength is assured with known as the most effective protective coating available duces buildings that are remarkably soundproof, weathertight and efficiently insulated against heat losses.

Adapted to All Designs

is actually required for structural purposes in order to

provide for the attachment of standard building materials.

Because Mac-Mar Steel Framing follows well-estab-

Easy to Build

irregularities are as readily framed in steel as in any shape or form of the building to be constructed with Mac-Mar Steel Framing. Irregular roof lines, dormers, gables, hip roofs and projecting bay windows, or other No limitation is imposed upon the designer in the

tions and alterations are effected other structural material. with equal simplicity.

Strength and Durability

in Mac-Mar Steel Framing are of cept standard I-beams and channel sections used for girders, floor All structural members employed hot-rolled, copper-bearing steel exjoists and rafters which are of hot-

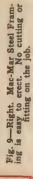
lished principles of design, any contractor familiar with building material normally applied present methods of construction Mac-Mar Steel Framing, the secan assemble Mac-Mar Steel Framing and attach thereto any type of adjacent to the frame. The following pages show the elements of quence of operations in assembling them for all types of buildings, and standard methods of attaching all

Fig. 7. Tools used in assembling Mac-Mar Steel Framing; a wrench, screw-driver and a connecting pin.

normal building materials.



Fig. 8.—Left. Mac-Mar Steel Framing has reserve strength for rigidity and durability. Hot-rolled, copperbanting steel is used.



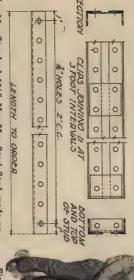


MAC-MAR

Only four basic types of members plus wire cable wind

Steel Frame. Typical elements are described on this page. bracing are required for the construction of a Mac-Mar

mill fabricated to length and assembled hot-rolled, copper-bearing steel angles ing a unit 334" deep from face to face. units are used for framing openings and with bolted, riveted or welded clips form-All members are perforated with $\frac{7}{16}$ " holes 2" on centers. Short lengths of these Mac-Mar Steel Studs are made of two



Standard 334" Mac-Mar Steel Stud made up of two angles with spacing clips.

2. Sills (also girts and plates)

perforated on 2" centers, assembled back to back with Framing. They are made of two channels having flanges Sills, girts and plates are identical in Mac-Mar Steel

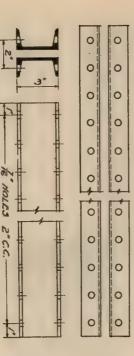


Fig. 12. Sills, girts, and plates are made of two standard channels. CLIPS JOIN CHANNELS AT INTERVALS

a multiple of 2". Odd dimensions are fitted by means the sills, girts, or plates at any desired spacing which is beam connections and rafter connections are bolted to clips joining the channels at required intervals. Studs

3. Girders and Floor Joists

the load across the given span. tural steel I-beams of whatever size is required to carry Girders used to span basement areas are standard struc-

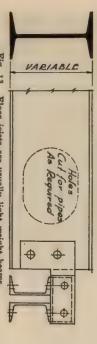


Fig. 13. Floor joists are usually light weight beams

NATIONAL BUILDERS CATALOG

special end connections similar to those shown in Figure 13. Where pipes or conduit pass through the floor across the floor joists, holes are cut in the webs at the required These joists are connected to sills, girts, or plates with points. This cutting is done at the mill. Floor joists are usually made of light I-beam sections.

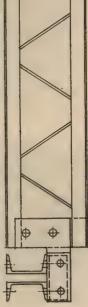


Fig. 14. Mac-Mar Junior Trusses are optional for floor joists.

Truss. This is a steel joist having flat top and bottom chords, with a web made of welded bars in the form of a Pratt truss. Where these members are used as floor See Figure 14. ioists, pipe and conduit can be run through the webs. An optional type of floor joist is the Mac-Mar Junior

4. Rafters

accordance with job requirements. The channels may be bolted various types of ridge and eave connections in as required. web perforations to allow the bolting of a nailing stringer perforated on their flanges at 2" intervals, or may have Rafters are made of standard channels to which are

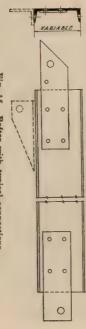


Fig. 15. Rafter with typical connections

5. Wind Bracing

and 25. The cables pass through center of studs. cables and turn-buckles as pictured in Figures 16, 24 against wind stresses and distortions by means of steel Mac-Mar Steel Frame buildings are thoroughly braced

mill-fabricated from these standard members. All other special elements required in any building are

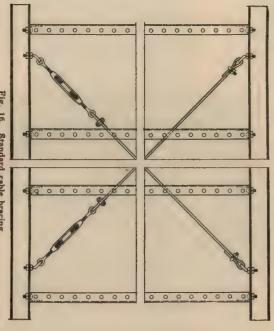


Fig. 16. Standard cable bracing.

Continued on next page

How to Erect Mac-Mar Steel Framing

and anchor bolts inserted on center line of sills. Foundations must be brought true to level and

1. Set Girders and Basement Columns

tion. Interior columns with the top of foundadation walls, bringing ning basement areas are customary set on footings in the of standard I-beams are their top Hanges level set in notches in foun-Girders can usually be Large girders spanmanner.



walls without special punched at mill to receive columns and sills. rigging and fitted as shown in Figure 17. Girders are

slid

over

bolted bottom plate shown in Figure 18. Before tight-ening nuts over anchor bolts, the sills are shimmed to Sills are set on foundations and joined at corners with



Anchor bolts, which have previously been set in foundations on center lines of sills, are then made fast. exact level and grade and grouted with cement mortar,

quired intervals as shown in Figure 19. The angle connection is then bolted to the sill at the proper point Floor joists are laid across the first floor spans at and re-

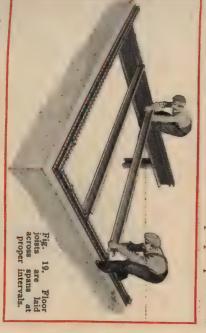


Figure 20. to this the floor joist hanger is bolted as shown in

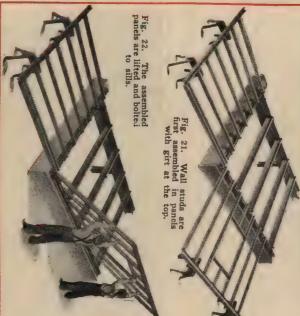
resulting floor comes true without further adjusting Since the sills are properly aligned and level, the

fitting. Headers framing interior floor openings are similarly bolted to the proper floor joists.



4. Assemble and Erect Studs

shown in Figure 21. A girt piece is bolted to the heads to assemble panels of studs in a horizontal position as Instead of erecting studs individually, it is much easier



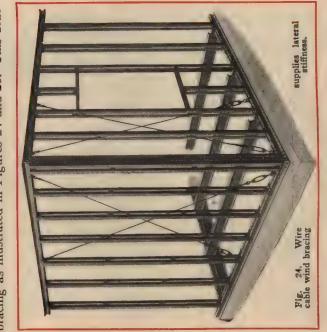
and assembled at the same time. The bottom ends of of the studs and any window or door openings are fitted the studs rest on the sill. The entire panel is then raised

connections, bolting the sill. While the panel is studs to the sill. completes the bottom temporarily held upright channels forming the the studs catching in the as shown in Figure 22, space between the two by one man, the other

then raised at the ad-A similar panel is

exterior and interior angles for application of finishing Figures 21, 22 and 24, forming attaching points at both jacent corner and the corner posts bolted together at the top with the connecting plate shown in Figure 28. posts are formed of three studs as shown in

into the Mac-Mar Steel Frame by means of wire cable bracing as illustrated in Figures 24 and 25. This brac-Lateral stiffness to resist wind pressures is introduced 5. Install Wind Bracing



ing consists of U-bolts fastened to the sill and girt or plate, steel wire, clamps, and turn-buckles. The wire is installed on the center line of studs, passing through the

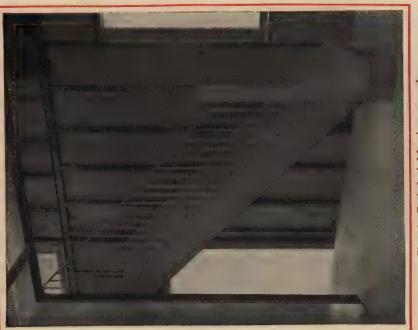


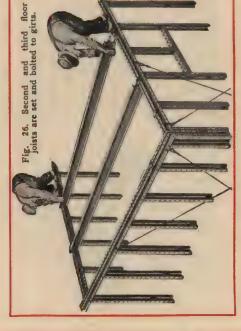
Fig. 25. Typical wind bracing on panel.

space between the angles forming each stud, and the turn-buckles are then tightened until the structure is absolutely plumb and true. Similar cable bracing is used to stiffen roof panels where shown on drawings.

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Set Second and Third Floor Joists

the same manner as the first floor joists (see figures 19 and 20). The connections are identical because the same Second and third floor joists are installed in exactly type of member forms the sill, girt, or plate.



7. Erect Second Floor Studs

All studs for the upper floors, walls and bearing partitions are assembled in a horizontal position on temporary

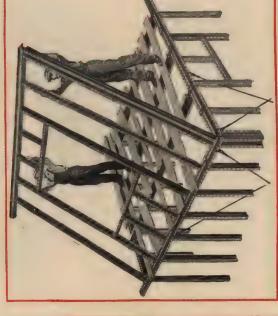
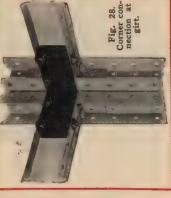


Fig. 27. Second floor studs are assembled in panels and raised from within

joists. When panel is planks laid over the upper floor

Fig. 34. Three men quickly raise each pair



up to the eave line, with wind bracing installed and the entire structure made true and rigid.

the cial angle connection thus prepared, it is with the bottom of In this manner, the shown in Figure 27, Girts are bolted at corners with a speentire frame is asshown in Figure 28. the studs resting groove of H lifted girt. the

sembled and carried

All special roof details, including gables, dormers, hip roofs, gambrel roofs and the like, are assembled follow-

9. Partitions (Non-bearing)

MAC-MAR STEEL FRAMING

At each rafter location angle connections (see Figure The rafters are then bolted through their end connections, using a single bolt as shown in Figures 30 and 31. The end connections which are attached to the rafters vary in type according to the 8. Rafters and Roof Details 29) are bolted to the plate. style of the roof.

tom ends of the studs are spaced by bolting them to a flat perforated steel plate which in turn is attached to

Non-bearing partitions do not rest on the partition

sills but are suspended from floor joists above.

The bot-

floor joists below and later becomes embedded in the

The tops of studs are attached to two angles

concrete structural floor.

at the eaves, is then as shown in bolt as shown in detail Figures 32 and 34, and the ridge connection is completed with a single having thus been hinged pair of rafters, raised



No ridge board is used. In its place, two light angles Fig. 29. Rafter connections to plates. in Figure 33.



rafters at either side of the ridge connection.

Fig. 30, Fig. 31. End connections on rafters are fastened with a single bolt (forming a hinge) to the rafter support shown above.

ure 36)



In this manner, all parts of a Mac-Mar Steel Frame structure are assembled, ready for the attachment of other building materials. The isometric drawing below (Figshows how the typical members are used and their relationship to each other.



into place and top angles

thus forming a panel

which is then

securely bolted to floor

joists directly above.

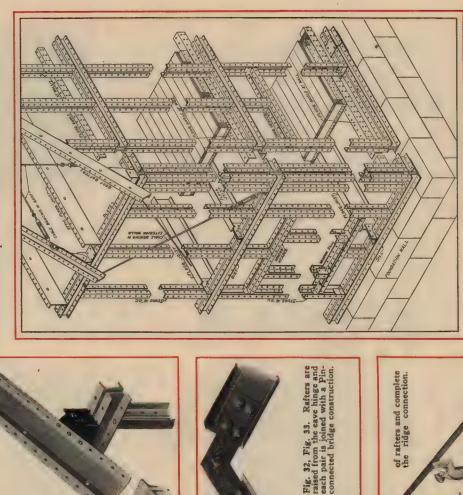


Diagram showing relationship of all typical members.

are prepared at the mill and properly numbered to fit All elements pared by the engineering department of the Steel Frame House Company. Assembly is exceedingly simple if these It is to be especially noted that there is no cutting, fittogether in accordance with the erection diagram preting or fabrication required on the job. instructions are followed.

Continued on next page

ing the same principles.

Installation of Mechanical Equipment

equipment. Plumbing and heating contractors and elec-Framing for the installation of all types of mechanical installations, except locations are pre-determined. tricians follow their usual practices in making their Provision is made in the design of Mac-Mar Steel

Electric Wiring

are specified for electrical circuits, the cable is strung each pair of perforated angles. This space will receive through the Mac-Mar Steel Studs in the space between Where armored cable or non-metallic sheathed cable any standard type of



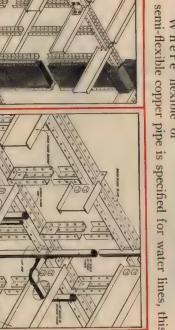
Fig. 37. Electric wires and flexible cable are easily run through studs.

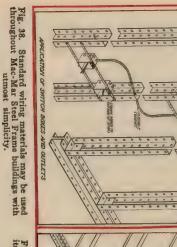
armored cable or nonmetallic sheathing. Outwired or bolted to adperforated metal strips, let boxes are secured to jacent studs as shown

carried up into the partithe floors like other pipe is specified, it is laid in sills or girts. systems, and may be may also be run in the tions by bending around Where rigid conduit Conduit

lets with vertical lines bent around the sill flanges. girts for baseboard outhollow faces of sills and proper points. rated at the mill at the carried between in the latter case the through the floor beams; beam webs are

Where flexible or





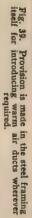


Fig. 40. Heating and plumbing systems of all types are installed through openings provided for the purpose.

Pipes are supported with standard hangers bolted or

through girts or plates of outside walls or interior partirectangular warm air ducts where they are carried

The ducts used are the standard 31/2" ducts em-

They are supported with

Special provision is made in the framing plan for

Warm-Air Ducts

wire stays fastened through the perforations of adjacent

Horizontal ducts are carried between floor beams

where possible, but when run across the floor beams, the

ployed with wood framing.

wired to the structural members. To simplify installation problems, complete heating

diagram showing preferred location of all pipe lines. Continued on next page

installations. webs of the latter are perforated at the mill for duct

to the Steel Frame House Company. Heating plans and requirements should be submitted

3. Piping Systems of All Kinds

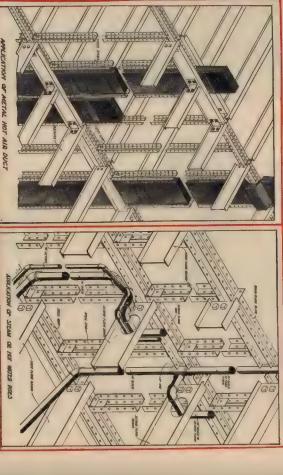
ard methods. All types of heating and plumbing pipe lines are readily installed in Mac-Mar Steel Framing, following stand-

with angle offsets around girts and plates. Larger sizes including soil pipes, are run through chases provided in Vertical lines of small pipes are run through partitions

the frame for this puraround in the usual partition are will not fit in a 3¾" quired points. Large at the mill at the replates being cut away pose; manner. sizes of soil pipes that the girts and framed



Fig. 41. Typical installation of pipes and warm air ducts.



the framing, except that holes are provided to carry pipes may be run without special provision through any part of

through horizontal members.

and plumbing plans should be supplied to the Steel Frame House Company engineering department together with

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How to Apply Standard Building Materials

in

1. Forming Fire-resistive Concrete Floors

should be of concrete or gypsum. Standard methods used of Mac-Mar Steel Framing, the structural floor slabs for forming such floors over steel joists are followed. To gain full advantage of the fireproof characteristics

A. With Fibrous-backed Wire Fabric

backing, is usually supplied in large rolls. A sheet is unrolled across the floor span, as shown in Figure 42, and cut to length. One end of the sheet is then clipped This material, consisting of a welded galvanized wire mesh to which is attached a heavy fibrous waterproof



Fig. 42. Unrolling fibrous-back wire fabric over steel joists. Fig. 43. The fabric is fastened at one end and stretched taut.

end until taut and again clipped to the adjacent sil the purpose. The sheet is then stretched from the other to the nearest sill, using labor-saving wire clips made for girt. Similarly, the fabric is fastened with clips to each l or

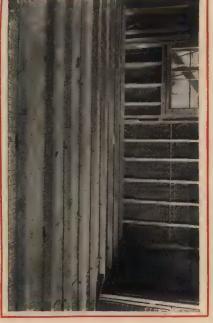


Fig. 44. Where wood top floor is specified, sleepers are set in place before pouring concrete.

pletely covered. With manufacturer's instructions until the area is comeach additional sheet overlapping the other in accordance of the intervening floor joists. Repeat the process with

are lifted 1" off the fabric by means of metal sleeper sleepers are installed, as shown in Figure 44. The sleepers chairs (No. 301). See Figures 44 and 46. If a top finished floor of wood is specified, screeds or

unforcing fabric will permit the use of any desired water-cement ratio in the mix and will function as a form while Inforcing fabric will permit the use of any desired wa Figure 45. The waterproof fibrous backing of this The floor is then ready to be poured as shown in re-

the mortar sets. The reinforcing wires become embedded

in thickness. Concrete slabs of this type are usually from 2" to 3" When screeds are not used for nailing the



Fig. 45. Concrete of any desired water-cement ratio may be poured directly on fibrous-backed wire fabric.

to receive linoleum, rubber tile or other flooring top floor, the cement is troweled to a smooth finish ready

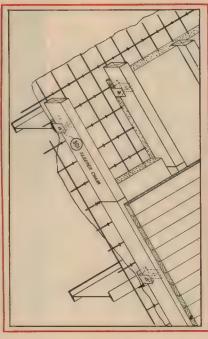
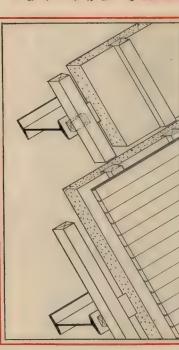


Fig. 46. Isometric diagram showing floor construction with fibrous-backed wire fabrics.

B. With Wood or Metal Forms

Similarly, concrete slabs may be poured over ten-



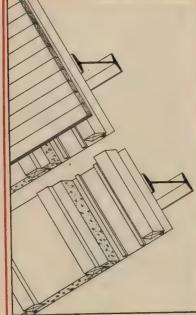
47. Diagram showing concrete slab floors poured over removable wood or metal forms.

flanges of the steel joists with top surfaces approximately porary wood or metal forms supported on the lower

laid across the joists and the slab is poured as indicated in Figure 47. When the floor has hardened, the forms Rod or wire reinforcing is are removed, and are re-used for other floor areas. 1/2" below the top flange.

C. With Ribbed Sheet Metal or Metal Lath

Sheet metal with a stiffening rib, as shown in Figure 48, may be used as a form for these concrete slabs. It is merely laid across the steel joists with overlapping



Concrete slab may be cast on ribbed sheet metal which is laid across the steel joists. Fig. 48.

seams and the concrete is poured with or without additional reinforcement.

Ribbed metal lath is also commonly used, as shown in Figure 49. It is laid across the joists and clipped thereto with labor-saving wire clips made for the purpose. The concrete used must be of a very dry mix to prevent the weights of metal lath are specified by the Steel Joist The following cement and aggregate falling through. Institute.

Joist Spacing
19 to 19" centers
9" to 24" centers
4" to 30" centers Up to 19% to 24% to 3

7ype of Laths 38"—3.4 lbs. per sq. yd. 38"—4 lbs. per sq. yd. 34"—4 lbs. per 100 sq. ft.



Ribbed metal lath is frequently employed for forming concrete slab floors. Fig. 49.

D. Other Types of Floors

Complete data sheets and construction information will be supplied where any other type of floor is specified. These types include pre-cast and cast-in-place gypsum slabs, pre-cast concrete, wood plank and steel deck floors.

Any desired type of finished floor surface may be installed in Mac-Mar Steel Frame buildings. The method of laying hardwood strip and plank flooring is indicated in Figures 46, 47 and 48. Wood block flooring may be

cemented directly to the concrete slab. Linoleum, rubber tile, cork tile, etc., are likewise cemented to the slab. Ceramic tiles, slates and stones are set in mortar directly on the concrete.

Exterior Wall Construction

ing work employed with stucco may also be attached in used, but where the architectural effect of clapboards board siding, may be applied to the frame. Half-timber-Mac-Mar Steel Frame Buildings should have exterior walls of masonry in some form. This includes brick, Wood siding cannot be advantageously an asbestos cement sheathing, resembling clapthe manner shown for interior wood trim. stone, and stucco. is desired,

Stucco is applied to any standard type Brick and stone facings are constructed as veneers over the steel frame.



50. Mac-Mar Steel Frame houses have masonry exteriors of brick, stone or stucco. A group at Philadelphia.

warping of Mac-Mar Steel Framing assures superior stucco base which in turn is attached directly to the The rigidity and freedom from distortion or results and freedom from cracking of stucco or masonry

the designer may specify. The attachment of all basic Insulation of exterior walls is effected either on the outside face or the inner face of the studs, or both as types of insulating materials is indicated on the follow-

Any combination of materials may be employed with ing pages.

Mac-Mar Steel Framing. The ground story, for example, may have a stone facing 8" deep, and the upper



Fig. 51. Stone and stucco were used on this house in Detroit.

Provision for such changes in material is made in the stories, or some part thereof, may have a stucco finish. frame itself with suitable overhangs to align the surfaces.

ess of driving the nail expands the inner end until it fits anchor, through the perforation thus formed. 3. Application of Plaster and Stucco Bases and Insulating Boards

MAC-MAR STEEL FRAMING

application of all types of wallboards, insulating boards, metal lath, wire fabric and other standard building ma-Attachment methods have been developed for terials to Mac-Mar Steel Framing.

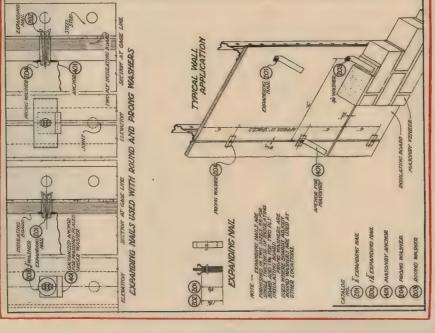
A. Wallboards and Insulating Boards

Framing by means of a special expanding nail (No. 201) The board is set against the Fibrous wallboards are applied to Mac-Mar illustrated in Figure 52.

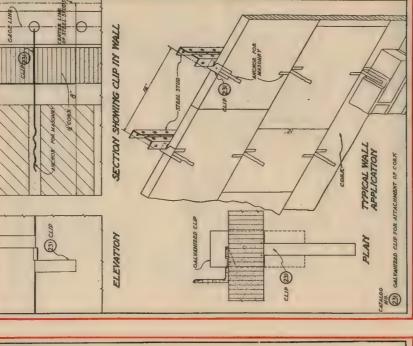
This clip is laid over the edge of each

in Figure 54.

block of cork board and hooked around the outer flange



Fibrous wallboards and insulating boards are quickly attached to steel framing with a special expanding nail. Fig. 52.

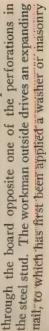


Cork board is applied to steel framing with a simple hook clip which also forms masonry anchor. Fig. 54.



Cork board being applied to exterior of house at Pittsburgh. For method see Figure 54. Fig. 55.

falls into the stud perforations. The outer end of the of the steel stud where it is held in place by a notch that clip has three prongs, one serving as a masonry anchor and the other two to hold the boards above and below.



frame and a workman from within punches a hole

Steel Frame house at Pottstown, Pa., showing wallboards with masonry anchors ready for brickwork.

Fig. 53.

The proc-

the nail is driven, the tighter the grip. Special prong washers are used to clip adjacent boards where they join along a stud. Round washers are used elsewhere, except when a masonry anchor is desired, as shown in Figure 52. Cork board, usually 11/2" thick, is attached to Mac-Mar Steel Framing using galvanized clip No. 231 as shown

tightly into the perforation in the steel stud. The harder

Continued on next page

B Stucco and Plaster Bases

and wire clip No. 242 where on one side only. Attachment bar No. 605 is used for ceiling construction. type of material is employed on both sides of the stud. Figure plaster bases on Mac-Mar Steel Framing. Methods of attaching the fibrous-backed wire fabric are shown in Figure 56, using attachment stay No. 241 where this boards or plaster boards may be used as stucco and Fibrous-backed wire fabrics, metal lath, gypsum wall-

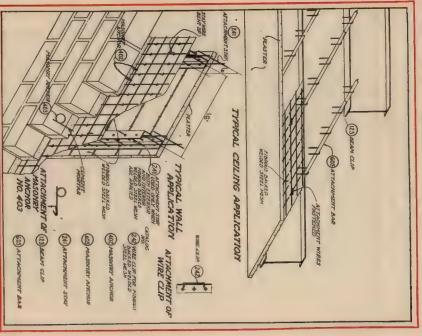


Fig. 56. Methods of attaching fibrous-backed wire fabrics



Fig. 57. Fibrous-backed wire fabric used as plaster base.

forations as shown in Figure 58. Metal lath is wired to the studs through the stud per-

to the frame, using wire clip No. 101 as shown in Figures 59 and 60. The illustration, Figure 60, shows the struction of partitions in fireproof buildings. use of wallboards on Mac-Mar Steel Studs for the con-Cypsum and other hard plaster boards are attached

NATIONAL BUILDERS CATALOG



Metal lath is wired to the stude thro

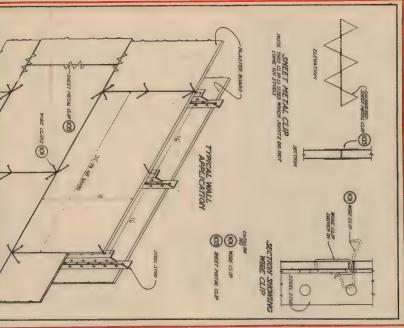


Fig. wire clip is used with gypsum wallboards



Fig. 60. Plaster boards used for partition work.

Continued on next page

4. Roofing and Roof Trim

the upper flange of the channel. This construction prorafter channel so that its upper edge is slightly above It consists of heavy wood planks nailed across the rafters Frame buildings is shown in Diagram A of Figure 61. vides excellent insulating qualities and is rated as slowto a 134"x334" nailer strip bolted to the back The customary roof construction for Mac-Mar Steel of the

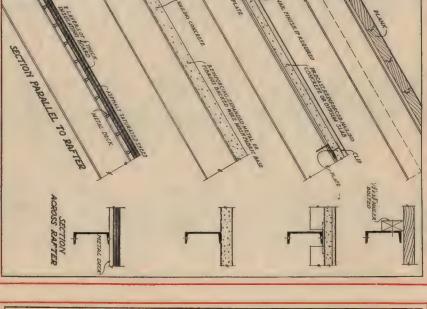


Fig. 61. Methods of constructing roofs.



Fig. 62. Roof framing with nailing strips ready for planking.

Smith & Harold Rief, Architects, Pittsburgh.

possible with %" sheathing. a substantial nailing base for slate or tile which exposed to flame. The 2" plank roof deck also provides burning construction, because no edges of the wood are is not

angle members as purlins between rafters. may be used as shown in Diagram B of Figure 61; using Pre-cast slabs of reinforced nailing concrete or gypsum

> fourth type of construction employs a ribbed sheet metal deck with two layers of ½" thick insulating boards cemented to the deck with an asphalt mastic, as shown expanded metal or fibrous-backed wire mesh as described in Diagram D, Figure 61. of comparatively flat slopes, casting it upon reinforced for floor construction. See Diagram C, Figure 61. A Nailing Concrete may also be cast in place on roofs

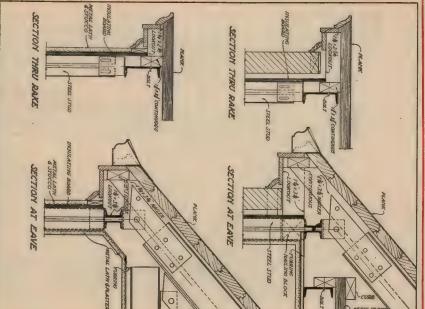


Fig. 63. Typical roof details showing blocking.

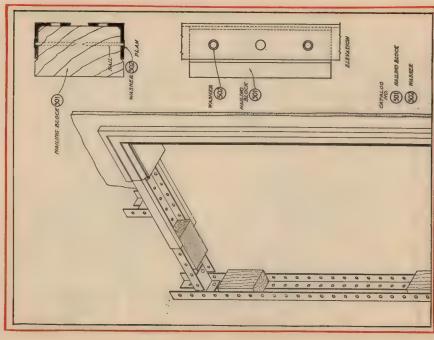


Fig. 64. Completed house (see Fig. 62). Note various roof treatments successfully handled with steel framing.

of wood blocks and lookouts attached to the rafters, studs Special details are developed to provide for any type of details are available on request for built-in gutters, open or plates. Typical details are shown in Figure 63. Other rafter cornices, dormers, porches, and similar elements. roof detail which the designer may wish to employ. Roof trim is attached to the eaves and rakes by means 63

5. Doorways and Windows

attachment of door casings and trim is made to wood through the side perforations. These blocks are deeper The structural framing of door and window openings consists of Mac-Mar Steel Studs set with the channels facing toward the opening, as shown in Figure 65. The nailing blocks (No. 501) which are cut to fit within the stud channel where they are held in place by nails driven



Nailing blocks are installed in door and wind to receive frame and trim. Fig.

than the studs, allowing for the side nailing of trim and the face nailing of frames as shown.

Wood and metal windows are installed in window Typical details are openings, using similar blocking. shown in Figures 66 and

67. Other details available on request. and

6. Interior Trim

Cabinet Work

(No. 601) previously applied to All interior wood trim, rails, picture molds, wood cornices, etc., is nailed in grounds are machine countersunk including baseboards, chair place in the usual manner the frame. These wood centers to correspond to the standard spacto wood grounds drilled and on 2"

221, is used for the attachment of the ground to the studs, a simple process which is very rapid and economical. These details are shown in Figure 69, while Figure bers. Either expanding nail No. 201 or a key bolt, No. 70 gives typical details for other types of interior trim.

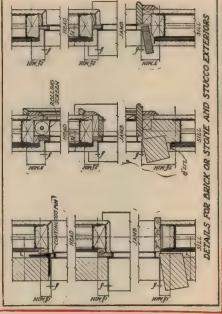


Fig. 66. Typical window details for steel sash showing methods of blocking to steel frame.

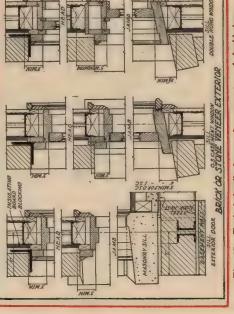


Fig. 67. Typical details for wood casements and double-hung windows, showing blocking.

How to Buy Mac-Mar Steel Framing

Mac-Mar Steel Framing is sold to builders, with or distributors of the Steel Frame House Company located in all of the principal cenwithout erection, by more than one hundred twenty-five

Write to the Steel Frame House Company, Pitts-

ters of the United States.

burgh, Pa., for the name

and address of your near-

est distributor or for direct quotations which will be submitted to you through the 10 c.a.l representative. When seeking estimates or



proposals, submit complete

architectural plans of the building, including plans

or diagrams showing all

plumbing and heating lay-

outs. Estimates and quota-

tions are cheerfully fur-

Fig. 68. Wood trim may be employed as freely in Mac-Mar steel framing as in wood construction.

ing of studs or other mem-

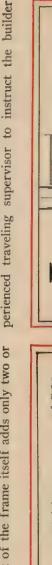
NATIONAL BUILDERS CATALOG

nished without obligation. Continued on next page

MAC.MAR STEEL FRAMING

Cost of Mac-Mar Steel Framing

above the cost of other constructions but without these Because of the superior construction which Mac-Mar Steel Framing affords, including the use of masonry fac-Frame building may range from seven to ten per cent fireproof details of construction. It should be remembered that the cost of the frame itself adds only two or ings, fireproof concrete structural floors, metal lath and other fireproof plaster bases, the cost of a Mac-Mar Steel



The Steel Frame House Company will supply an ex-Service to Builders

and are so rapid and easy that workmen quickly acquire

the necessary facility to make these installations without

added labor cost.

devices and methods of construction developed by the Steel Frame House Company have been so simplified

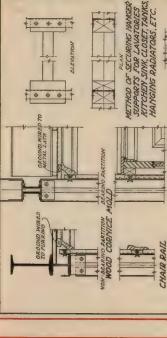


Fig. 70. Typical details showing installation of cabinet work, panelling, etc Special details are provided to meet unusual conditions.

FLOOR

ACCESS DOOR FRAMES

KRAIL & HANGING ROD

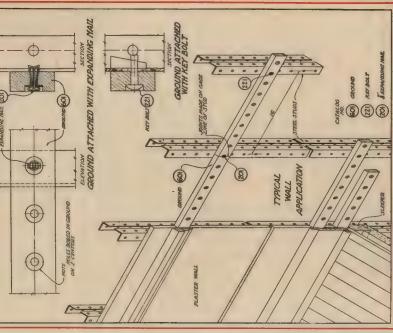
D

and his crew in the erection of Mac-Mar Steel Framing and in the application of various types of building maresentative will visit the job from time to time until terials. Where necessary this supervisor or a local repthe builder is thoroughly familiar with all details. When you have once built a Mac-Mar Steel Frame building, you will prefer its construction to any other type because of its simplicity, speed and quality.

Literature and Data Sheets

The condensed instructions for building with Mac-Mar Steel Framing contained in these pages are fully amplified and developed in other publications available upon request. Write to the Steel Frame House Company for complete literature.

Remember that when you order a Mac-Mar Steel Frame, all engineering work is done by the Steel Frame House Company, which also supplies complete construction diagrams, framing details, schedules of materials and detailed instructions for assembling and finishing.



Wood grounds drilled on 2" centers are provided for the rapid and easy attachment of all types of wood trim.

viously worth the difference. The cost of laying concrete three per cent to the cost of the building as compared or wire lath as against non-fireproof materials may be with wood framing, and the advantages gained are obfloors or building masonry facings, and of using metal readily figured by any experienced builder.

Estimating Costs

through its nearest representative, will give a fixed price building practices with wood framing. Foundations are should keep these considerations in mind when complet-The Steel Frame House Company, bid for the structural framing with or without erection. The builder can estimate for himself the cost of concrete floor construction. All other details conform to standard quired to attach other building materials to the steel construction. This is due to the fact that the attachment Any builder, employing Mac-Mar Steel Framing, identical, wall construction is normal, and the labor rerame may be figured the same as for nailing to wood ing his estimates.

MAC-MAR STEEL FRAMING

More than one hundred sixty Mac-Mar

ern homes, apartments, garages, shops, filltation of light structural steel units to the through many decades of usage. The adapother great buildings has proved its worth construction employed for skyscrapers and no other material. steel has structural qualities possessed by the sake of novelty, but wholly because ing stations, schools, and hospitals, not for STEEL has invaded the field of minor building construction, including mod-The structural steel

qualities of strength, durability and rigidity, fire safety and lightning protection which larger buildings possess. construction of minor buildings brings to them the same

ing and it possesses remarkable qualities of soundproofproof, free from distortion through shrinkage or warpusual causes of plaster and stucco cracks. It is vermin ing and heating insulation when employed in the manner recommended by the manufacturer. In addition, Mac-Mar Steel Framing eliminates the

Higher Mortgages

It is noteworthy that one of the greatest lending com-panies in the United States has examined every type of ten per cent higher loan appraisal for Mac-Mar Steel approval only to Mac-Mar Steel Framing. Upon the completion of this survey, its experts recommended a steel framing for minor buildings and has given its full building built with other construction. Frame buildings than would be granted to a similar

Marketability

at any point. Parts can be taken down if necessary and the frame re-arranged or re-built with practically the same ease as wood construction. out difficulty, for all members are so fabricated as to permit the attachment of additional structural elements Mac-Mar Steel Frame homes may be remodelled with-

tightness and insulating qualities of walls and roof; asvoices; low heating cost due to the extreme weatherfords such sales features as Mac-Mar Steel Framing: tenance and upkeep costs. What other construction afsurance of safety against lightning; and negligible mainproving the sound of musical instruments, radio and proofness; unusual acoustical qualities imsafety; remarkable rigidity and sounddecorations; entire confidence in their fire the greatest appeal are these: Absolute to test and prove their superior qualities. to January 1, 1930. Owners have lived in Mac-Mar Steel Frame houses long enough Steel Frame buildings were erected prior freedom from plaster cracks and injury to The features they have reported as having

Protected Investments

ment against depreciation, loss from fire or lightning and safer and more permanent construction. obsolescence which may result from the trend toward Mac-Mar Steel Framing protects the owner's invest-

00/00/00/00/00/00

tional value for the development of low-cost, fireproof require floor loads not exceeding 100-lbs. per square apartment buildings, stores, shops, passenger vehicle vestment structures up to three stories in height which parking garages, and other similar commercial and instructural steel for the development of taller buildings. foot. Mac-Mar Steel Frame elements may be used with Investment builders will find these features of excep-

masonry facing and plaster work are removed, the frame Framing, have a substantial salvage value, for when the can be taken down and its parts used again. Tax-payer buildings, erected with Mac-Mar Steel

Use it for all your homes and other buildings where formerly you employed non-fireproof construction. Mac-Mar Steel Framing protects your investment.

STEEL FRAME HOUSE COMPANY

A Subsidiary of McClintic-Marshall Corporation

MAC-MAR STEEL FRAMING Makers of

PITTSBURGH, PA. Main Office

All Principal Centers Distributors in

ORNAMENTAL IRON AND WIRE WORK

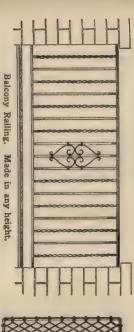
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1200 25th Avenue, MILWAUKEE, WIS.

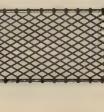
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Wire Window Guard. Made to order, any size or shape.



Balcony Railing. Made in any height,

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Wrought Iron Gates. Suitable r interior as well as exterior

note of structural distinction not obtainable by the use of any other material. It is the type residences and apartments now so poponly correct ular, either Ornamental and wrought iron lends a material to use in the Spanish tor interior or exterior.

special designs and submit drawings. for our complete Catalog. Our Drafting Department will make Send

Wrought Iron Stair Balusters.



Badger Balcony Railing and Wrought Basket in modern residence.



Badger Wrought Iron Stair Balusters and Bal-cony Railing in modern residence.

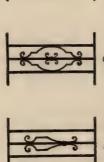


Wrought Iron Curtain Rod and Bracket. Takes the popular metallic or stipple finishes

ORNAMENTAL IRON AND WIRE WORK

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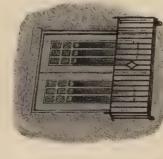




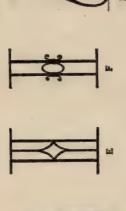


Stock Panels that Save You Money

All panels shown are stock designs. You may select any design of scroll ornaments you wish. They are all the same price. When building more than one home you can change designs of scroll ornaments. The height of all stock Panels is 2 ft, 4 in. Vertical bars are ½ in. square, electrically



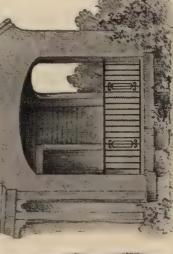
Design B 23. Balcony rails. Complete wrought iron deck is optional or same can be applied to wood decks. Ornamental scrolls for supporting wood or wrought iron decks may be had if desired. Send sketch and dimensions.



welded into 1 in. by ½ in. channel frames top and bottom. Finish heavy coat outside black paint. They are crated and shipped ready to install, including screws and bolts. Interior Wrought Iron Rails. Area Grates and a complete line of General Iron and Bronze work is also manufactured by us. Special designs gladly figured. Our engineering department is at your service.



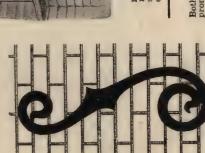
Design E 24. Wrought iron rails, assembled units. Design as shown using E 4 scroll post, flat top bar, of wrought iron section. Send sketch and dimensions of conditions for estimating.



Design P 26. Wrought fron rail between columns or plers. Send sketch and dimensions for estimate. Rails can be made of assembled units or special design. Prices will include rail and fasteners complete, ready to erect.



Design E 25. Wrought iron starts at entrance. Special No. 1 size 8 ft. out from building. 9 in. curve, 42 in. at house, 2 ft. 8 in. at front carried in stock. You would be agreeably surprised how a little touch of iron work helps resale values.





Design S 22. Assembled stock units for over sun parlor porches and decks. Estimates will include flat top bar rails of wrought iron, end posts, braces, urns, bolts and screws to make complete. Send sketch and dimensions for estimates.

Both Nos. 211 and 215 made of bronze. Will not rust. To give pronounced appearance, ornaments are black finished. Special discounts for quantities. Left: No. 215, height 25 in., price \$7,50. Right: No. 211, 2 ft. wide by 11 in. deep, price \$18,00.



STEEL PRODUCTS

Sales Representative

DAVID LUPTON'S SONS COMPANY

Allegheny Ave. & Tulip St. PHILADELPHIA LUPTON PAGE 2

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only where necessary to make clear the construction vide building material dealers and contractors with or application of the products. factory installation of Lupton products. the information required for the proper use and satis-This catalog has been prepared especially to pro-Text is used

eral principles underlying satisfactory installation. Details are typical, showing construction and gen-

satisfactory results in the natural daylighting and co-operation in whatever degree required to obtain ment value and to this end we offer our service and ventilating of any type of building. Lupton Products are designed to give full invest-

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Lupton service is available for the erection of any Lupton product. Lupton erectors, familiar with proper installation methods, assure a highly satisfactory job at a reasonable cost

of our products when this is preferred. and Residence Casement Windows be handled by dow glaziers. We suggest that glazing of Pivoted, otners. Basement, Commercial and Architectural Projected Glazing should be done by experienced steel win-However, we will arrange for glazing any

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tight seal and to prevent glass touching metal. Glass should be bedded in putty to form a water-

Putty

cracks away from the steel. Because various clisteel windows. Ordinary putty intended for wood mates require variations in the ingredients of satiswindows will not be satisfactory as it dries hard and sales representatives. may be secured from the Lupton Company or its from local sources. factory putty, we recommend that putty be obtained Always specify steel window putty for glazing When this is impossible, putty

and Architectural Projected Windows, pages 9 and 29 dark gray in color and will not stain masonry. off any excess cement. frame, presses frame into place and quickly strikes finished pointing job. weathertightness only and is understood not to be The calking cement furnished by Lupton is elastic, dark gray in color and will not stain masonry. When See calking specifications for Residence Casements applies calking, Erector spreads cement on such application

Painting

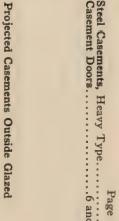
weathering surfaces of windows in order that it may ble for cleaning plaster or other foreign matter from Lupton Products are given a shop coat of paint before shipment. After glazing, no painting should not be painted over and cause imperfect contact. is advisable to hold the painting contractor responsibe done until putty has set (about three weeks). It

should be separately listed and located or otherwise plans or in specifications. If more than one type of be accurately listed and located either in schedules on clearly designated. product or type of hardware is desired, each type To insure accurate estimates, all products should

Continued on next page

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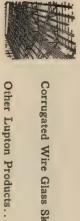


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OTHER LU PTON PRODUCTS

Lupton products that are not covered in detail in the following pages are described here and on page 64. Literature giving full details may be had upon request.

ALUMINUM WINDOWS

Lupton Double Hung Windows



A practical, good-looking, easy-moving window for office buildings, hotels and apartments. Weather-tightness is assured by the carefully designed construction of galvanized steel plate. Low cost is due to quantity production.

Windows

Lupton Continuous Windows



These windows form a weather-protecting shelter of glass over a continuous opening, and give remarkable efficiency in the natural lighting and ventilation of industrial buildings. Long runs are readily controlled by Lupton Continuous Window Operat-

s h o u l wherever

and aluminum d be considered

smart appear-

Consult

cleaning. restored

at any time by Cost is not ex-

brightness may readily be

Lupton Continuous Window Operating Device

masonry. The silver gray lustre of aluminum grad-ually weathers to a soft gray tone, yet the original ing is required and there is no corrosion to stain special alloy, strong but light in weight. No paint-Lupton Aluminum are made of a Employing the tension principle, Lupton Continuous Window Operating Device has no equal for operating runs of top-hung windows or large groups of pivoted windows. Free from useless stresses. Gives efficient mass control and exceptionally long

Lupton V-Type Roof Design

A roof design using
Lupton Continuous
Windows. A most efficient method of providing daylight and fresh air in single story buildings with a large floor area under one roof. Especially recommended for foundries, forge shops and other buildings where heat and smoke are produced.

Continued on next

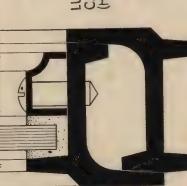
NATIONAL BUILDERS CATALOG

LUP' TON PAGE 3 ance is a a

Representative. factor.

ASEMENTS LUPTON

quality implied when casements are specified is fection required in this type of window. The fine by skilled craftsmen, experienced in casement work and familiar with the high degree of perowner and tenant. Lupton Casements are made The several types of casements here illustrated have been developed by Lupton to meet the varying requirements of modern building construc-Their distinctive appearance, durability and continued ease of operation appeal to designer, tion.



LUPTON-JTEEL CASEMENT/ (HEAVY-TVPE)

which never needs painting and with a natural color quite in the spirit of modern decoration. Casements made of a non-corroding alloy, Lupton Aluminum Casements pages.

Casements designed for use wherever the finest

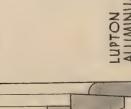
Lupton Steel Casements-Heavy Type

to manufacturing standards.

type steel window construction is required. Sizes and designs to suit individual requirements. A

assured by rigid inspection and close adherence

more detailed description is given on next two



LUPTON ALLMINUM CASEMENTS

ment type window is required in smaller size

Sturdily built of one piece steel

openings.

tions.

use in residences, apartments or wherever a case-

Casements made in standard and stock sizes for

Lupton Residence Casements

adjusters

building, and eliminates stay bars and sliding

sizes and are outside glazed. All ventilators are equipped with the Lupton projected movement which allows cleaning of glass from within the

pitals and schools.

Designed chiefly for use in office buildings, hos-

Lupton Projected Casements

Made in sizes and designs to meet individual re-

quirements. Inside glazing is recommended.

They are made in standard

units have trim slender muntins dividing the window into lights of pleasing proportions. Muntins however may be omitted if it is desired to use leaded glass. See pages 8 to 25 for further de-

Readily screened and shaded.

Standard



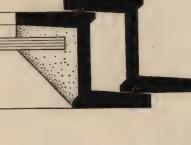


Literature descriptive of any of the above types

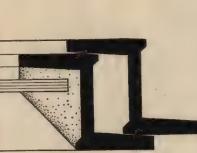
scription and details.

Catalogs

of Casements will be sent upon request.



LUPTON-JTEFL REJIDENCE CAJEMENTS



TYPICAL-FULL-JIZE-JECTIONS

LUPTON PAGE 4

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= LUPTON STEEL PRODUCTS

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LUPTON STEEL CASEMENTS—HEAVY TYPE

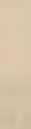
tional buildings, public libraries, churches, banks, club The finest type of steel window construction built houses, residences, hotels, office buildings and other They are used in large and small buildings of high educato sizes and in designs required for individual cases. construction-monumental buildings, class

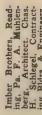
buildings of similar character.

described on next page. More detailed information regarding casements is contained in literature that Various types of casements and casement doors are will be sent upon request. When casements are specified Lupton will gladly cooperate by submitting tentative designs and finished drawings.













M. N. Windsor Residence, Winnetta, III. Mayo & Mayo, Inc., Architects. Wells Brothers, Contractors



University Baptist Church, Baltimore, Md. John Russell Pope, Architect. M. A. Long Company, Contractors

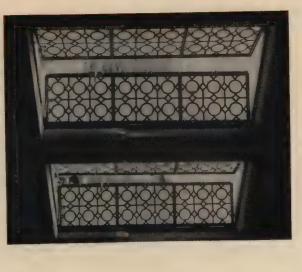
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LUPTON PROJECTED CASEMENTS

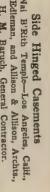
For Standard Size Openings

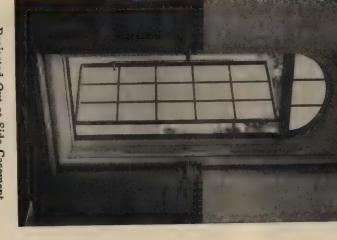
LUPTON STEEL CASEMENTS-HEAVY TYPE (Continued)



B'Nai B'Rith Temple—Los Angeles, Calif., A. Edleman, and Allison & Allison, Archts., H. M. Baruch, General Contractor.

Showing the interesting effect obtained with leaded glass. Double casements (shown) are equipped with cremone bolts and sliding adjusters. Single casements have looking handles. Adjusters may be eliminated by using friction hinges of close up or extended type. Extended type permits cleaning glass from inside the building.





Side projected casements will remain at any de-sired degree of opening without sill adjusters or stay bars. Note clearance at jamb which permits cleaning glass from inside building. The case-ment shown has a double locking device. Smaller casements have single locking handle. Memorial Municipal Building, Norwood, Mass. Wm. G. Upham, Architect, Edward F. Miner Building Company, Contra-Projected Out at Side Casement

NATIONAL BUILDERS CATALOG

LUPTON PAGE 6

Types and Sizes

should not exceed the maximum sizes given below for each Casements are made in types listed below. Sizes of units

type.

Side Hinged—Single 2'9" x 8'0", Double 5'6" x 8'0".

Side Projected—Single 2'6" x 5'0", Double 5'0" x 5'0".

Vertically Pivoted—4'3" x 8'0".

Projected In-at-Top or Projected Out-at-Bottom 4'6" x 2'6".

Horizontally Pivoted—4'6" x 4'6".

Top or Bottom hinged—5'6" x 4'0".

Fixed units may be of any size within practical required limits.

Fixed units may be combined to form composite windows using steel mullion and impost bars or steel plate mullions and im-

posts.

Construction

Members are all solid hot rolled steel. Corners are mitered and solidly welded with exposed welded surfaces ground flush. Muntins, if used, are welded at intersections.

Hardware

All locking hardware, adjusters, etc., are solid bronze, polished. Projected types have steel pivot arms and solid bronze shoes. Hinges may be solid bronze butts (with steel pin) or malleable iron friction hinges. Friction hinges hold ventilators open at any angle up to 180°, without stay bar or adjuster. Made in two types, close up and extended, the latter permits cleaning glass from inside the building.

Erection, Glazing, etc.

See page 2. Inside glazing is recommended. Detail of glazing stop is shown on page 4. The use of muntins is optional and large sheets of plate glass or leaded glass may be used if desired. (Lupton does not furnish leaded glass.)



Casement Door

Residence, Ardmore, Pa.,
Arthur H. Brockie, Architect, Builders
J. Sims Wilson & Co., Contractors & Builders
Casement Doors are similar in construction to casement windows, but have an extruded bronze threshold and a steel kick plate at bottom. The door illustrated has an exposed cremone bolt. Where it is desired to operate door from both sides a concealed cremone bolt or a cylinder lock (with top and bottom bolts on dead leaf) is used.

What is an additional bolt of the concealed cremone bolt or a cylinder lock (with top and bottom bolts on dead leaf) is used.

Applying to Casements the principles of standard-ization approved by the U. S. Department of Com-merce, Lupton has designed three general types of outside glazed casements, in a wide range of standard sizes. These casements are available at moderate cost for use in office buildings, hotels, apartment houses,

ing. also permits glass to be cleaned from inside the build-Ventilators are of the projected type. A friction shoe holds them at any reasonable degree of opening, eliminating sill hardware. The Projected movement windows where screening is desired. Metal screens are designed to be attached to



State Farm Mutual Insurance Co., Bloomington, Ill. Lundeen, Hooton, Roozen & Schaeffer, Architects, J. L. Simmons Co., Contractors Combination Projected
Casement hospitals and similar high grade structures.

The horizontal ventilator at the sill when open slightly admits fresh air without draft. By closing one of the upper ventilators and opening the other against the wind an air movement is induced which draws the used air out of the window.

Providence Chicago, I Wallace, A O'Neil Co Projected in at Top Casements lence High School, yo, Ill. Morison & ce, Architects, W. E. I Construction Co., Contractors

This type window may be had with additional ventilators substituted for the fixed lights shown in illustration.



Types and Sizes

There are three general types—Combination Projected, Projected in at Top and Single Projected. The first two types are made in the same 50 standard sizes as Architectural Projected Windows. See page 29. These sizes range from 3'0" x 4'6" to 5'0" x 9'0". Single projected units are made in the following types and

Widths —3'2" Heights—1'6" Widths -1'6" Heights-2'0" Projected out at side—35 sizes, right or left hand casements Vidths—1'6" 1'9" 2'0" 2'3" 2'6" 4'6" 5'0" eights—2'0" 2'6" 3'0" 3'6" 4'0" 4'6" 5'0" Projected in at top—15 sizes 3'8" 4'2" 4'8" 5'2" eights—1'6" 1'9" 2'0"

Single projected units m windows (see illustration). units may be used separately or in composite

Construction

Members are solid hot rolled steel. Corners of frames and ventilators are welded with exposed welded surfaces ground flush. Ventilators are equipped with steel pivot arms and adjustable bronze friction shoes. Continuous anchors for anchoring in masonry, and mullions and imposts for combining units are made of 13 ga. steel.

Hardware

Locking handles are of solid bronze with rumbled finish.

Screens

Metal screens with bronze wire are furnished (at extra where desired, to be attached directly to the casement. cost)

See page 2. Windows by angle glazing clips. Erection, Glass, Glazing, etc.
See page 2. Windows are outside putty glazed. Glass

is held



Service Station, Washington, D. C. Composite Window

Composite windows of varied design can be built up from the smaller single projected units and fixed lights, using steel mullions and imposts.

RESIDENCE · TYPE LUPTON·CAS



Residence of R. G. Bent, West Hartford, Conn. R. G. Bent Co., Archits. & Contrs.

They open easily and close tightly in any weather. The and frame assures unfailing weather tightness while the continuous, overlapping two-point contact of ventilator faintest breeze is caught by the open casement.

muntins and mullions, and ease with which they can be

screened and shaded, make them ideal for sun porches or any enclosed porch. They are at their best at all sea-

sons of the year.

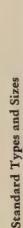
Lupton Steel Casements represent the finest in window

dence work but because of their adaptability to various types of architectural treatment, they are used effectively and economically in many types of buildings such as apartment houses, school dormitories, club houses, swimming pools, restaurants and tea rooms. Their slender

design and construction. Designed primarily for resi-



Illinois Golf Club, Chicago, Ill.
M. J. Moorehouse, Architect. Chas. W. Gindele Co., Contrs.



Standard Types and Sizes are shown on page 16. The part of the window that can be opened (the ventilator) is shown by dotted lines drawn from two corners of the

ventilator to the center of the opposite side.
A small bottom hinged ventilator, opening in, may be attached below certain standard units as indicated on page 11.

Glass Sizes

Glass sizes are indicated in the diagrams on page 16 by a number placed in the center of each light. Glass in lights not numbered is $8\frac{1}{2}$ "x11". Templets are furnished for cutting glass for semicircular head units.

NATIONAL BUILDERS CATALOG

and permit a more satisfactory awning installation. LUPTON PAGE 8

Continued on next page

- LUPTON STEEL PRODUCTS -

75

LUPTON·CASEMENTS

RESIDENCE - TYPE

Casement Doors

is made to be used wherever an inexpensive casement door is required. It is especially designed for use with Residence Casements. The design of the locking handles and the size of the glass lights (8½″x11″) conform to those of Residence Casements. It is outside glazed and made in one size only, 3/3¼″x7′0″ out to out of frame. Bit key or cylinder lock is furnished as The Standard Casement Door detailed on page 26 specified.

These are described on page 6 and in a catalog that Where special sizes or design are required, Lupton sement Doors, Inside Glazed are recommended. will be sent on request. Casement

ments are made of solid rolled steel sections. Special sary, resulting in a more rigid casement. See page 18. Frames and Ventilators-Lupton Residence Caseshaped sections decrease the number of pieces neces-

Ventilator and frame members are mitered at cor-

ners, assembled in accurate jigs and solidly welded, assuring permanent rigidity and alignment. Welded Muntins-Muntins are strong, and slender, spaced joints are ground flush with members

to form lights of pleasing proportions without decreasing desirable glass area. See page 18.

are specially designed to insure weathertightness, strength and pleasing appearance. They are attached with rustproofed steel bolts as indicated in details on Mullions and Imposts-Mullion and Impost bars

17. All casements and transoms are equipped with friction hinges of malleable iron. The hinge pin is a permit cleaning the glass from within the special cadmium plated bolt which clamps the movtion sufficient to hold casements or transoms open in The use of peg stays and adjusters and room. Close-up friction hinges are used on top hinged able leaf of the hinge between two bronze washers, eliminating rusting and assuring smooth uniform fric-Hinges-See illustration on this page and on the resulting screening difficulties are avoided. tended friction hinges, used on all any position.

transoms. Non-friction hinges can be furnished when specified for use with the under screen operator shown on page 14.

See page 2.

See page 2. Calking cement for head, jambs, sill, mullions and imposts is furnished by Lupton. Installation Details and Erection

See page 2. Residence Casements are most satisfactorily erected in openings already prepared. They should be handled with reasonable care and carefully stacked until openings are ready to receive them.

ments should have calking cement applied all around their edges and should be set plumb and square. Details showing casements set in various types of construction are shown on pages 19 to 25. setting instructions which if carefully followed, assures satisfactory installation. Suitable lintels must Attached to each Lupton Casement is a card of be provided over openings to carry wall weight. Case-

Continuous Anchors

Where Casements are to be set in masonry walls (except where cut stone trim is used) the use of con-See detail on page 19. Anchors are of heavy galvanized sheet steel, attached at time of erection. Continuous anchors are furnished only when specified, at tinuous anchors at head and jambs is recommended. slight added cost.

Glass and Glazing

See page 2. Do not use single thickness glass. An inexpensive plate glass which gives undistorted vision, is available for Residence Casements. Consult a Lupton representative. Special glass, that does not exclude the vital properties of the sun's rays, is of value in casements used in sun porches, etc.

Leaded Glass

Muntins may be omitted if leaded glass is desired. This involves no extra cost but additional time must be allowed for making changes. Leaded glass is not furnished by Lupton. See details on page 25.

HARDWARE



ton Handle — No. 352 shown (opposite hand No. 351).

Standard Shera-

The shaded units on page 16 are carried in stock by

Windows in Stock

Lupton Dealers for quick delivery.

This handle with gray painted finish is the one furnished

Old Coin Bronze Statuary Bronze NATIONAL BUILDERS CATALOG



Polished Brass Nickel Plate Imitation Bower Barff



type handle will be furnished when

unless an alternate

specified.

Stock units have holes for attaching these

on page 12.

Methods of screening Lupton Casements are presented

Shades and Screens

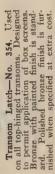
screens. Provision is also made for attaching shade and curtain brackets to units having a fixed transom light

See page 10. Fixed transom lights pro-

over ventilators.

tect the curtain valance (and roller shade if one is used)

specified in one of the following finishes, at extra cost:





Strong malleable iron friction hinges hold the ventilator open in any desired position. Alden P ark Handle— No. 2771 shown (opposite hand No. 270). This solid bronze handle is an alter-nate furnished only when specified.

Continued on next page

RESIDENCE · TYPE . LUPTON · CASEMENTS ŧ ŧ



OPTIONAL VENTILATING UNIT

The combination of ventilators shown here is suggested for use in all rooms where a balanced inflow and outflow of air is desirable.

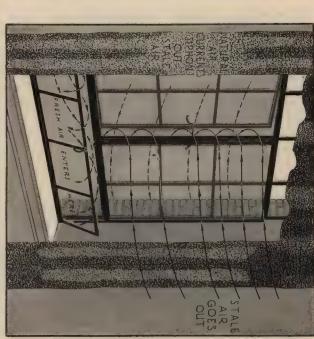
The outswinging leaves of Lupton Casements invite the cooling breezes that take the hardships out of summer heat. With this new ventilator added to supply of fresh air, without draft, at all seasons. the casement, it is possible to maintain a constant

ventilation enjoyed in office buildings equipped with Lupton Windows. provides in homes the same high standard of

for winter storage. It is not necessary to remove the screen or open it during the summer season, but it is easily removed taching a fixed screen to the outside of the window. This Ventilating Unit has provision made for at-

cannot be used to operate the casement. casement, underscreen casement, underscreen levers or operators such as those described and shown on pages 12, 13 and 14 When a ventilating unit is used below a side hinged

shown on the following page. Details and Sizes--Details and standard sizes are



PROVISION FOR SHADES AND DRAPERIES

ment that can be both screened and shaded most satisfactorily is the one with a row of fixed lights over the ventilators. Lupton thinks of Casement Windows complete to the last detail of attaching shades and draperies. The type of Casepose. Wood trim is not disfigured. are mounted on the casement in holes provided for this pur-pose. Wood trim is not disfigured. If desired, wood trim may With this type of window brackets for shades and draperies be omitted and plaster returned directly to the casement

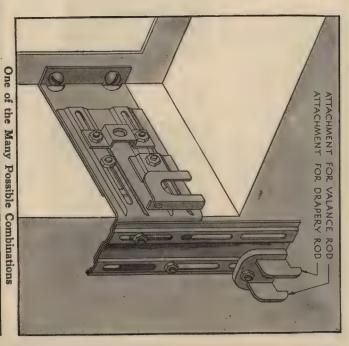
standard combination consisting of two brackets and a single Standard Attachments-Illustration below at left shows

CURTAIN

BRACKET

rod cut to exact length. This provides for attachment of a roller shade and a single pair of curtains. It can be purchased at the time windows are purchased, through the Lupton rep-

provides for roller shade, flat curtains, overdrapes and val-ance. Where valance is omitted and a decorative pole is to be be furnished. Consult a Lupton representative for full details used, a suitable ornamental end bracket of wood or metal can of the many possible combinations is shown below at right. Extra Attachments—Extra attachments are easily applied to original bracket for any changes that may be wanted. One



CORNER OF

FOR CURTAIN ROD

FOR SHADE

NATIONAL BUILDERS CATALOG Standard Attachments

SHADE ROLLER AND CURTAIN ROD CLIPS ARE ADJUSTABLE BY SLIDING IN THE SLOTS ESPECIALLY MADE FOR THEM

SCREW & NUT FOR ATTACHING CURTAIN ROD CUP TO BRACKET

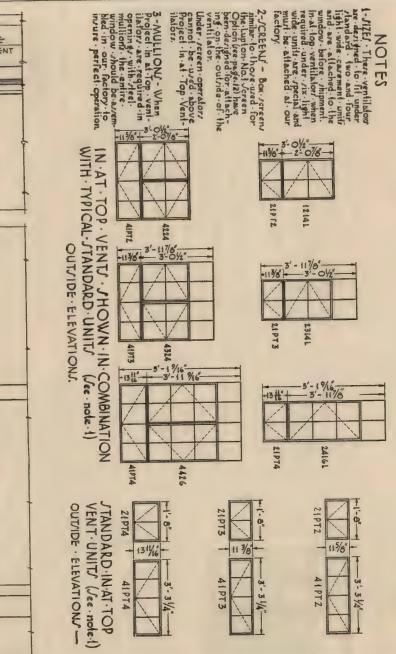
ALL LUPTON
CASEMENTJ
WITH FIXED
TRANJONJ
HAVE THESE
HOLES READY
FOR ATTACHING BRACKET

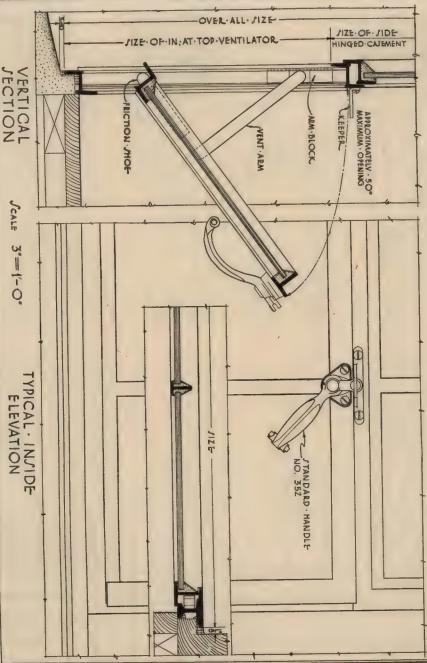
LUPTON PAGE 10

Continued on next page

WITH-PROJECTED-IN-AT-TOP-VENTILATORS LUPTON·CA SEMENTS







See d lescription on page 10

LUPTON PAGE 11

UPTON·CASEMENTS

RESIDENCE - CASEMENTS · FOR TYPES-OF-SCREENS

Lupton Box Screen (Option No. 1)



dence Casements have holes in the including the beautiful new Sher-This is the box screen that Lupton planned for use with their frame for attaching this type of screen. Through its use all the beautiful and practical features of Lupton Casements are retained, aton Handle and practical fric Residence Casements. tion hinge.

Two neat brackets casements are side pivoted, single-light wide casements pivoted screens. A small but positive-acting gravity catch holds the screen tightly closed. The spring pivots allow which attach to the window frame allow free movement Made in sizes to protect openings 1 and 2 lights wide and 2, 3 and 4 lights high, they Screens for 2-light wide and top-hung transoms are screened by means of a tophung box screen similar in construction to the sidemay be used separately or in pairs. the screen to be instantly removed. of screen on spring pivots.

tionately higher price, aluminum. For steel screens the frame is of one-piece tubular section rolled from 23-gauge steel, galvanized, painted gray, and wired with 16-mesh bronze wire cloth. The wire may be replaced if acci-Screen frame is made of formed steel, or, at a propordentally damaged.

Box screens applied to casements are shown on pages 13, 14, 24 and 25.

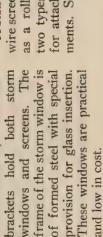
Clearances required at head, jambs and sill are shown on next page

Aluminum Screens

The aluminum box screens are of natural finish extruded aluminum alloy with corners solidly welded and finished smooth. Wire is 16-mesh rustless copper-bronze wire and may be replaced if accidentally damaged.

Lupton Storm Windows

In localities where winters are severe, Lupton Storm Windows may be substituted for box screens, as the same both storm frame of the storm window is of formed steel with special provision for glass insertion and screens. hold brackets windows



Alternates

be screened by any one of the methods described below. The additional drilling required for attaching these screens will be done at the warehouse of our dealer or distributor (at slight added cost), but your choice must To meet special requirements Lupton Casements may be stated at time of purchase.

Under-screen Levers (Option No. 2-A)

Same as Option No. 1, except that screen is so placed

on casement frame to allow for a Lupton lever-type underillus-Casement is opened and closed with the screen in place. Sill detail shown on next page. here operator, screen trated.



Box Screen, 4 Lights Wide (Option No. 2-B)

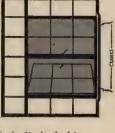
light wide screens as in Option No. 2-A, at any time. The same brackets act for hinging and fas-Same as Option No. 2-A, except screens are made four lights wide. One four-light wide screen may be substituted for 2 two-



Close-up Screen with Win-Dor Operator (Option

operated by crank under a screen, which requires the use of thin, flat hardware, instead of Lupton Sheraton Han-A Win-Dor Operator (screw-gear type with sill cover)

The friction feature must ton hinge. Used in localities where also be eliminated from the Lupfrequent storms require a similarly frequent opening and clos-Details showing clearances shown on page 14. ing of windows. dles.



Roll Screens

as a roller shade. Available in A Roll Screen which operates a wire screen in much the same way two types and in standard sizes for attachment to Lupton Casements. See details on page 15.

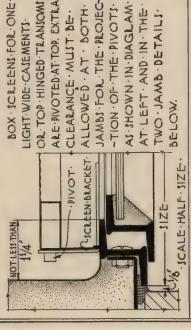


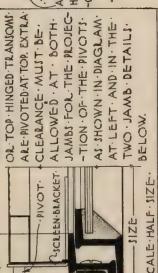
= LUPTON STEEL PRODUCTS =

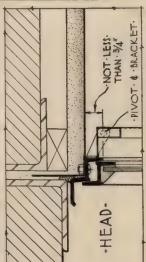
UPTON·CASEMENTS DETAILS OF BOX SCREENS.

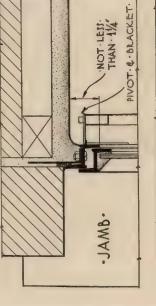
SCALE FOR DETAILS. 3"-1"-0 SHOWING CLEARANCES

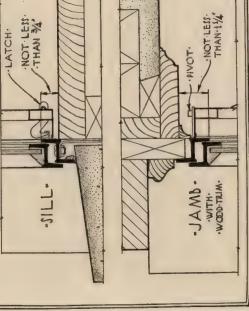
· ELEVATIONS · SHOWING · LUSE · OF · TOP · PIVOTED · · AND · SIDE · PIVOTED · BOX · SCLEENS CASEMENTS AND ALL TOP HINGED TLANSOMS BOX - SCREENS FOR ONE - LIGHT - WIDE -





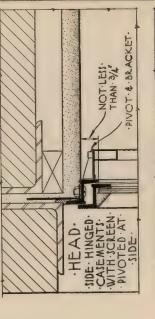


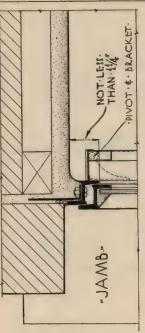


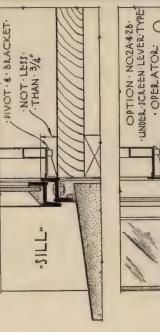


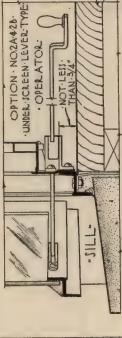
·CASEMENTS:HAVE· -TRANSOMS HAVE JCREENS-PIVOTED. ·TOP · PIVOTED -SIDE HINGED -TOP-HINGED .AT: SIDE -SCREENS TOP-HINGED-TRANSOM AND-1-LIGHT-WIDE-SIDE HINGED CASEMENT . RE--QUIRE-TOP-PIVOTED · BOX · 3CREENS

WIDE - SIDE - HINGED - CASEMENTS · BOX · SCREENS · FOR · 2 · OL · 4 · LIGHT









Description on page 8

Continued on next page

PAGE 12

LUPTON

DETAILS OF WINDOR SCREENS LUPTON CASEMENTS

SHOWING CLEARANCES.....

SCALE FOR DETAILS. 3-1-0

OPTION · NO. 3. WINDOR SCREEN COMBINATION

> OF-TYPICAL-UNITS INSIDE · ELEVATIONS

SCREEN CLIPS

2-3 OR 4-LIGHTS

LUPTON · SIDE · HINGED · CASEMENT, ~ OPERATOR · CAN · BE · APPLIED · TO · ANY WINDOR - COMBINATION - SCREEN - AND

PAINTED BLACK - OR SOLID LUPTON STANDARD HANDLE
MUST BE REPLACED BY THE ONE—
SHOWN AT THE RIGHT. BRONZE POLISHED AS SPECIFIED.

OF STOOL FOR CLIPS.

HALF - SIZE - SILL - DETAIL - SHOWING - NOTCHING

-LATCH - AT CENTER- OF - SCREEN

(ONE-AT-EACH-SIDE-OF-VENTILATOR)

OPERATOR

MPORTANT MEXACTLY

COVER

(SPECIFY CLOSE-)

2-LIGHT WID

OR TWO SCREENS AS DESIRED

CLOSE UP HINGES SHOULD BE SPECIFIED ON ONE LIGHT WIDE CASEMENTS TO PERMIT 90° OPENING. SCREEN THAN 3/4"

HEAD JAMB THAN 34

LOCKING
HANDLE

Scale 3"= 1-0"

LENGTH OF HANDLE

OUT TO SUIT IN FIELD

STOCK LENGTHS

ARE 8, 9, 2 ETC

WIDE - STOOLS - MAY - BE - DESIGNED - AS - SHOWN

CLEAR-CLIPS.

CLIP FOR - MOUNTING OPERATOR

BELOW-TO-AVOID-USING-LONG-HANDLES. 3"=1"0" SILL STEEL-WITH-BRASS-KNOB IN FIELD ~ NO.251-15 REMOVABLE . HANDLE NO-251-B-IS-ALL-BRASS,

3"=1-0"

SILL

- 1/4" EXACTLY

NATIONAL BUILDERS CATALOG

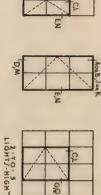
LUPTON PAGE 14

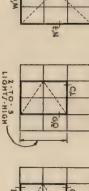
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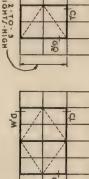
DETAILS · OF · ROLLS EMEZIS SCREENS.

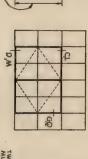


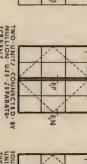
SHOWING · CLEAR ANCES. FOR DETAILS . 3"-1"-0

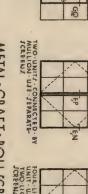


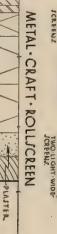




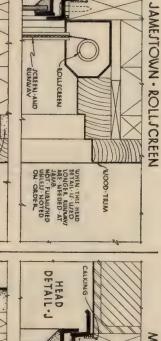






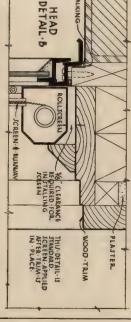


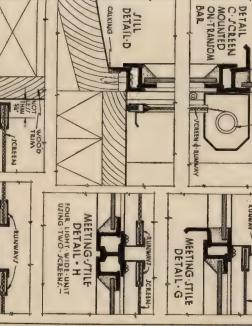
VOOD-TRIM

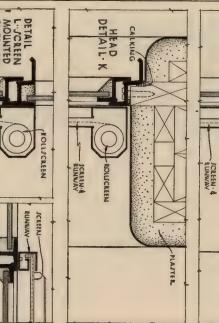


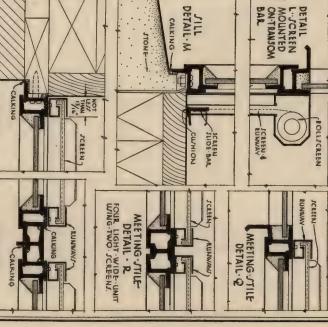
-ROLLICKEEN

HEAD DETAIL-A









JAMB DETAIL-N MULLION DETAIL-P

JAMB DETAIL-E

MULLION DETAIL-F

NATIONAL BUILDERS CATALOG

LUPTON PAGE 15

82

when units are placed one add . 1/4" to the opening

when two or more units in an opening) add 1/4-to the DIMENSIONS of the unit. They are measured out to out of thase unit. They are measured out to out of thase and correspond to the JIZE dimension shown in the details.

To obtain the Opening Dimension add/6 Head, Jill, and Jambs for Calking.

Jendard. Mullions (used when two or more units are placed side by side in an opening) add/4 to the opening.

Jendard Imposts (used when units are placed one directly above another) add 1/4 to the opening height.

See text on page 9

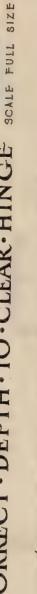
4528TH4

LUPTON PAGE 16

NATIONAL BUILDERS CATALOG

CORRECT DEPTH TO CLEAR HINGE DETAIL-OF-RABBETT-SHOWING





4-101/2"

3-31/4"

3-31/4

22-51/4"RAD

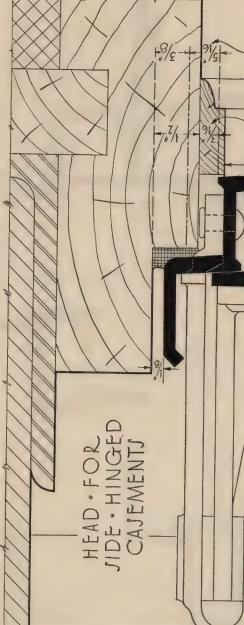
7,6-7

SIZES - SHADED - ARE - CARRIED - IN - STOCK, NOTE - ALL - ELEVATIONS - SHOWN - ON - THIS PAGE - ARE - OUTSIDE OF STOCK - ICHALA -

ELEVATIONS

AND - SIZES

STANDARD-TYPES



612661261

126612 6324VC

8324 VC

4314VCR

4314VCL

4324

2199

1266126

26612

4224

6224VC

196

8426 VC

6426VC

4416VCR 337

4416VCL

4426

337

3773

ANCE-AT-JAMBJ - OF TOP-HINGED-VENTS

7 - 1 7 0 9 0

1 6 6 7 7 6 1

19/510:9

126 6126

411 lights of stass are 8/2×11" except those marked otherwise Lights marked t are 9"x t

6428VC

4428

015 [15]0

4426TH4 116 611

2416TH2L

6628VC

*NOTES.

1-4|| units are viewed from outside.

2-Arrighthand-window. swinging from left to right is indicated by dotted lines converging toward the right of the left is indicated. By dotted lines converging toward the left is indicated by dotted lines converging toward the left by dotted lines converging toward by dotted lines converging toward the left is bottom is indicated by dotted lines converging toward the left by dotted lines converging toward the left by dotted lines converging toward the top.

4326

61166126

8528 VC

6528VC

4518VCR

4518VCL

4528

2518R

62

4224TH

ALLOW-SAMF-CLEAR-

CLEARANCE - WHEN - FRAMEI - ARE CLT - JTONE - CATT - IRON - JTEEL - OR - ARCHITECTURAL - TERRA-COTAR -

CLEARANCE - WHEN FRAMET ARE WOLLOW . TILE

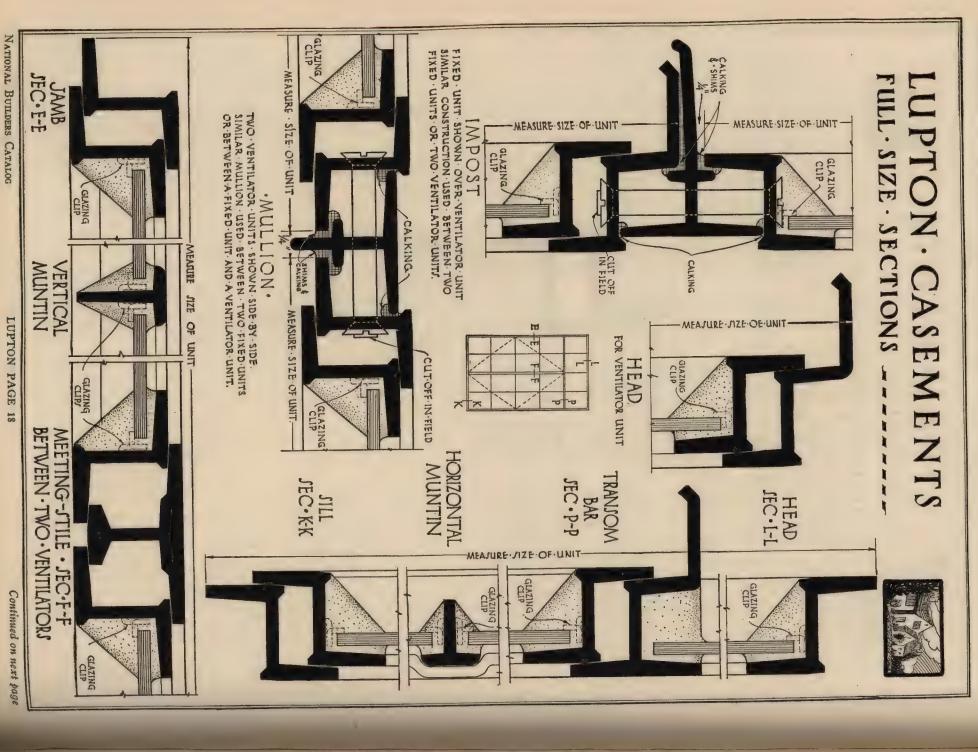
JILL-FOR-

SI DE - HINGED CASEMENTS

See text on page 9

NATIONAL BUILDERS CATALOG

LUPTON PAGE 17



DETAILS · OF · INST LUPTON · CAS CALLATION EMEZIS

WITH TILE OR BRICK BACKING PIVOT FIXED JCREEN. YCREEN! TRANSOM BAR WULLION MUNTIN VENT-OPEN! FIXED JCALE FOR DETAILS MOVABLE Parking Marking Markin ANCHOR JAMB JII/ BRACKET. HEAD

This detail shows the use of continuous anchors at head and jambs, ment is shown equipped with Box Screens and shade brackets. If ve to 18 for description, hardware, sizes, acreens, etc. the recommended practice for setting casements in brick or tile walls. Casemilator extends to the head, shade brackets cannot be attached. See pages 8

NATIONAL BUILDERS CATALOG

LUPTON PAGE 19

= LUPTON STEEL PRODUCTS =

LUPTON·CASEMENTS

DETAILS · OF · INSTALLATION



PLASTER BRICK · VENEER · WALLS · SCALE FOR DETAILS - 3" - 11-0" STOOL OD . HEAD. JAMB WOOT ·S 11 L L. CHEATHING STUDS AIR JPACE TO CALKING GOOW WOOM CALK 7715 000 SIZE 3212 STONE ·WULLION. TRANSOM. ELEVATIONS · ZIL POCKING 2 NOTE: WIDTH
OF WOOD MULLION
CAN BE INCREASED
TO SUIT MASONRY
OPENING

This detail shows casement set in brick veneer walls. Other methods of setting casements in brick veneer walls are shown on pages 21 and 22. Casement is shown equipped with Box Screens and shade brackets. If ventilator extends to the head, shade brackets cannot be attached. See pages 8 to 18 for description, hardware, sizes, screens, etc.

PAGE 20

LUPTON

NATIONAL BUILDERS CATALOG

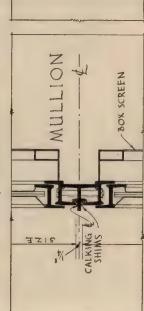
LUPTON · CASEMENTS

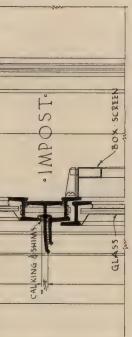
DETAILS · OF · INSTALLATION

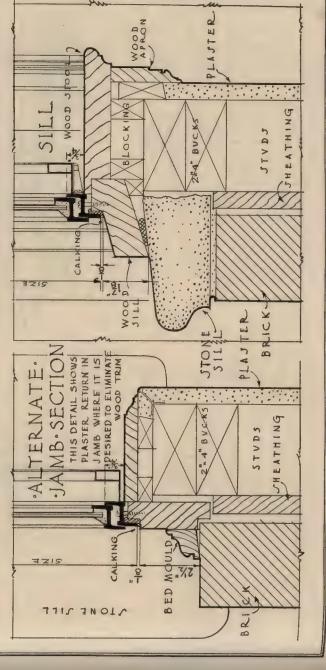


· BRICK·COLONIAL· VENEER. JCALE FOR DETAILS-37-1-6

NOTE: THIS DETAIL MAY BE VSED FOR LAR · JAMB · SI STUDDING JH EATHING MOV ELEVATION







Detail showing Casement set in brick veneer wall. Other brick veneer details shown on pages 20 and 22. Shade brackets may be attached to the fact transoms. If top hinged transoms are used instead of fixed transoms, shade brackets cannot be attached to casement. See pages 8 to 18 for description, hardware, sizes, screens, etc.

LUPTON PAGE 21

Continued on next page

NATIONAL BUILDERS CATALOG

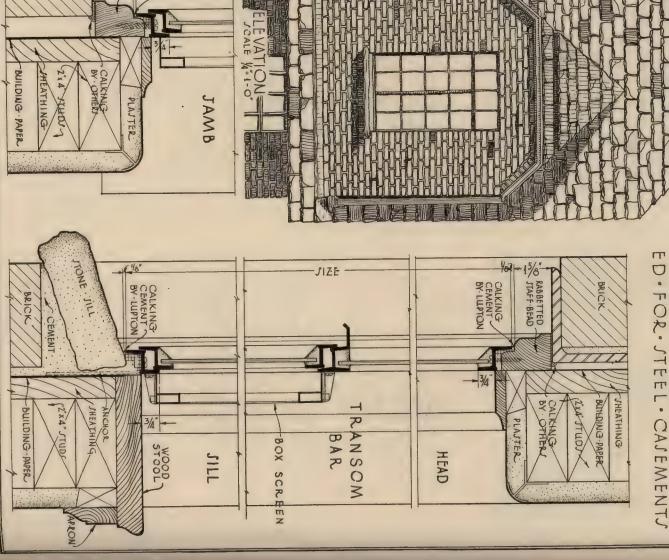
LUPTON·CASEMENTS

A · SUGGESTED · DETAIL · FOR

A.RABBETTED. STAFF. BEAD

SCALE for DETAILS

AN. EFFECTIVE . AND . INEXPENSIVE . METHOD . OF. A-STAFF . BEAD . DESIGN-INSTALLATION · USIN G.



Detail showing casement set in brick veneer wall. Other brick veneer details shown on pages 20 and 21. Shade brackets may be attached to case ments with fixed transoms. See pages 8 to 18 for description, hardware, sizes, acreens, etc.

CALKING CEMENT)

RABBETTED _ STAFF BEAD

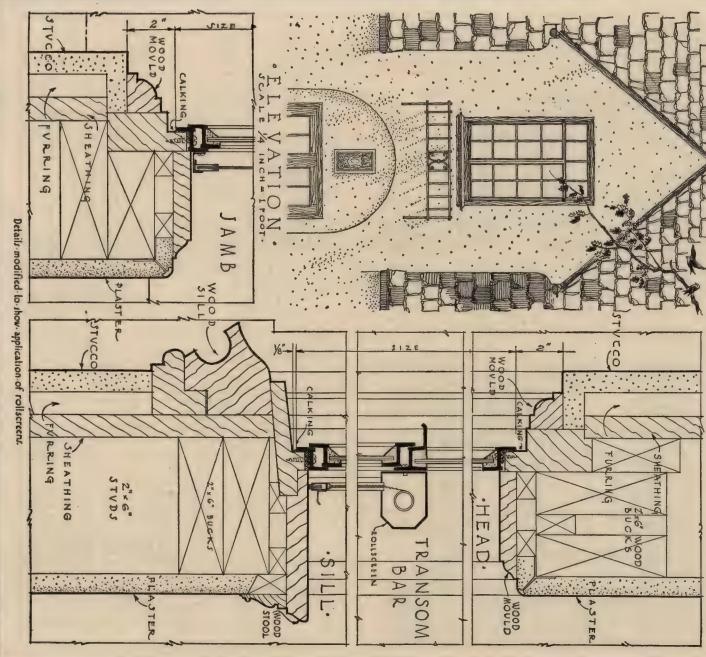
NATIONAL BUILDERS CATALOG LUPTON PAGE 22

Continued on next page

DETAILS · OF · INST LUPTON · CAS EMEZIS ALLATION



· SECOND · STORY · WINDOW · JCALE FOR DETAILS - 3" - 11-0" NCE OF MR . R . W . MS MAYO & MAYO · ARCHITECTS · KINNON · EVANSTON · ILLINOIS



Casement is shown with Rollscreen attached to transom bar, permitt tion, hardware, sizes, screens, etc. Rollscreens may be concealed in the ing shade brackets to be attached to casement. See pages 8 to 18 for description, hardware, sizes, screens, etc.

NATIONAL BUILDERS CATALOG

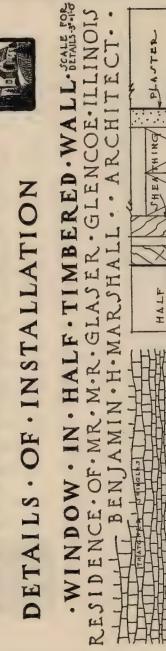
LUPTON

PAGE 23

- LUPTON STEEL PRODUCTS -

MENTS LUPTON · CASE

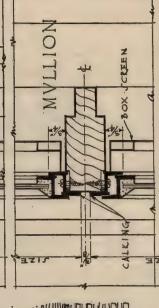
DETAILS · OF · INSTALLATION





MOOD HEAD DETAIL. MYLLION CREEN HALFIMERING

S.T.V.CC



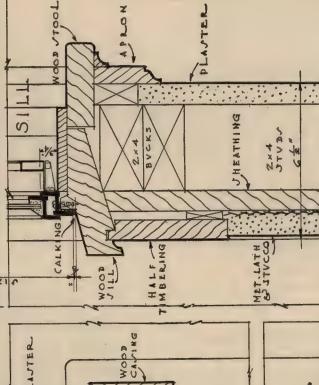
SCALE VATION.

SHEATHING

MET. LATH

29

BVCKS



Details modified to show new type head-drip and clearance required for screens.

·NIFNAM·

JAMB

- Articol

See pages 8 to 18 for description, hard-Continued on next page cannot be attached to cas When ventilators extend to head as shown in this detail, shade brackets ware, sizes, screens, etc.

NATIONAL BUILDERS CATALOG

LUPTON

PAGE 24

LUPTON - CASEMENTS

DETAILS · OF · INSTALLATION

·FOR.A. DORMER. WINDOW.

SCALE FOR DETAILS

PLASTER OD MOVLD DETAIL JO1575 CEILING HEAD 2"x 4" 5 T V D S TIMBER 31 V CCO ADED

Z-BOX SCREEN MULLION -WOOD STOOL

DETAIL 3 ŵ METAL COR-

Muntins may be omitted for the use of leaded glass at no extra cost. Lupton does not furnish leaded glass. When ventilators extend to head, shade brackets cannot be attached to casement. See pages 8 to 18 for description, hardware, sizes, screens, etc.

CHEATHING STVDS

NATIONAL BUILDERS CATALOG

LUPTON·CASEMENTS

DETAILS · OF · INSTALLATION

STANDARD INSTALLATION Z CASEMENT BRICK VENEERED DOORS WALLS

SCALE for DETAILS

MUNTIN JAMB BRONZE HANDLE NoTE SCALE " " 1 ON SCALE " " 1 ON SCALE " " 1 ON TUDS BRONZE 4 7 OUTSIDE HANDLE SCREW. STONE CALKING MITNUM SILL HEAD AIR SPACEY \$100 PLUG 7:0" 0. TO O of FRAME 1-2/2 -GLASS-II"-SHEATHING KICK PLATES REBATE HANDLE. TOP-BOLT BRONZE OM BOLT FLOOI

See pages 6 and 9 for additional information

Standard Casement doors are made in one size and design only, as shown in detail above.

LUPTON PAGE 26

NATIONAL BUILDERS CATALOG

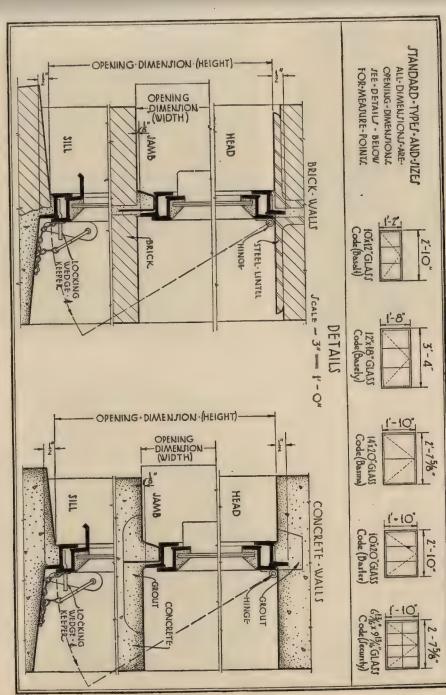
Continued on next page

These windows give maximum light and ventilation and are carried in stock by Lupton Dealers.

Made of the same steel sections as Lupton Resi-

pins permit removal of ventilators from inside. rail specially shaped to exclude moisture. Split hinge dence Casements with welded corners and a bottom

Security Type Window has small glass lights that keep out intruders. It can be locked closed or about 5" open. Hinge pins in Security Windows cannot be removed. Provision is made for attaching screens. Windows are painted gray and have steel locking pegs. Padlocks are not furnished by Lupton.



LUPTON UT ILITY WINDOW

requirements. Windows are glazed air without interfering with space tom and in at top, supplies fresh ments that are high above grade ings, private garages ford maximum light in small buildthe window, swinging out at bot-The pivoted ventilator at the top of operation and are painted gray. iron stay bar and holder for hand equipped with a installation in a concrete wall, de-This window is designed to af-Illustration shows details of inside. Ventilators are standard angleand base-11/02/11 13/0 12 ELEVATION 13/20 20 JCALE FOR DETAILS SEC-D **JECTION** C-OF-HINGE COP-VENT HEIGHT 3-71/2" 11/2" SECA SECA GROUT RAIL SEC-B

on the

pages 46, 47 and 48 may be followed when setting in other types of tails for pivoted windows shown on

-WIDTH -3'-41/2"

SEC-C SEC-C

LUPTON ARCHITECTURAL PROJECTED WINDOWS

These windows are much used in school class rooms, offices, dormitories, gymnasiums, club houses in connection with golf clubs or swimming pools, laboratories, hospitals, waiting rooms, sales rooms and stores. Large size windows of the same construction as standard windows are used in churches Ventilators swing out at bottom and at the sill a small ventilator opens in and acts as a wind shield thereby eliminating direct draughts upon persons seated near the window. Can be easily screened and

and banks.

Made of solid steel sections of medium weight, welded construction, either outside or inside glazed.

shaded.

Fifty standard sizes.

Royersford Trust Co., Royersford, Pa. Large, special windows Tilghman Moyer Co., Archts. & Engrs.

NATIONAL BUILDERS CATALOG

See page 2. Windows should be set plumb and square in prepared openings. After the windows are set and securely anchored, necessary grouting and pointing should be done by the mason. See typical details on following pages.

Calking

Office of Freyermuth & Maurer, Archts. South Bend, Ind. Indiana Lumber & Manufacturing Co., Contrs.

See page 2. At extra cost, the following will be furnished when specified:

1. Non-staining, elastic, calking c (to be applied by others) for jambs and sill.

Application of this cement at time of erection at points indicated in the standard details shown on following pages. Such application not to be a finished pointing job.

Glass and Glazing

PASSEROER TERMINAL

See page 2. Glass for Inside Glazed.

HARDWARE

Standard hardware as described below is all of solid bronze with highly polished and lacquered finish.



Chicago Nash Company, Chicago, III. George W. Klewer, Archt. Kelly Atkinson Constr. Co., Contrs.

Passenger Terminal for Stout Air Service, Dearborn, Mich. Ford Motor Company, Archts. & Contrs.

Ring Type Cam Handle No. 328

Used at center of Projected-Out-at-Bottom ven-itlators beyond reach from floor. For pole oper-ation. Mounted on universal clip riveted to frame of ventilator.





Used on Projected-In-at-Top ventilators Cam Handle No. 266

Used on Projected-Out-at-Bottom ventilators. For pole operation. Continued on next page

LUPTON ARCHITECTURAL PROJECTED WINDOWS (Continued)

- LUPTON STEEL PRODUCTS

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Opening sizes, glass sizes and wall details are the same for both inside and outside glazed windows.

Construction

Windows are made of solid rolled steel sections. Corners of frames and ventilators are tenoned, riveted and welded. Muntins are interlocked as described on page 41.

Ventilators have the Lupton Projected movement. They are balanced on two steel arms, and are held open in any reasonable position by two brass friction shoes.

Paint See page 2.

Erection

Windows is held in place by continuous glazing stops of rolled steel angle sections, attached with round head machine screws. Glazing stops are shipped attached. Glass for Outside Glazed Windows is held by rust-proofed steel wire glazing clips.

Screens and Shade Brackets

Screens, shade brackets, or both, may be had if desired. Drilling is done by Lupton. Curtain brackets are similar to those shown on page 10. Screens are 16 mesh bronze wire. Frames and fittings are of galvanized steel with gray painted finish. Screens are readily removable from inside the building. No change in standard hardware is necessary.

ARCHITECT URAL-PROJECTED-WINDOW!

INJIDE OR OUTJIDE GLAZED

DIMEN PETAIL FOR LAR-POINTS	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	1-4%6. 1-11%6.	7-1-7 % #% !	1-10% 2-2% 1-7%	4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	1. 3.9% 1. 1.1% 1. 4.7%	1-3%	1 - 6% 2 - 2% 1 - 2% 1 - 7%	1-10% 2'-2% 2'-2% 1'-9%	1. 3.4% 1. 1.3% 1. 1.3% 1. 1.3% 1. 4.5%	
5'-O" V.	HOUTE GA	S S S S S S S S S S S S S S S S S S S	33.76 7.505 1.505	1000 1000 1000 1000 1000 1000 1000 100	S E	1872	32.39	34.42		57.67. FBT 5090	
4 - 6"	38									33.34 17.459 17.459 17.459 17.459 17.459	6
b	4									~	10.1
										5.32 28.44 mr4090	
3'- 6"	9 _ ==									25.52 25.52 26.50	
ONS - 3-0.								19.91		16% 24. 23% 12.3% 16% 16% 16% 16%	* Giass - Sin
DIME	4 - 6" 13 34	5'-0" 16%	5'~ 6" 64" 1934"	6,-0.	6. 6.	7-0,	7'-6" 27	6'-0" 27	8,-6" 27	9'-0" 223 24, 224, 16	REALIZE-FONT

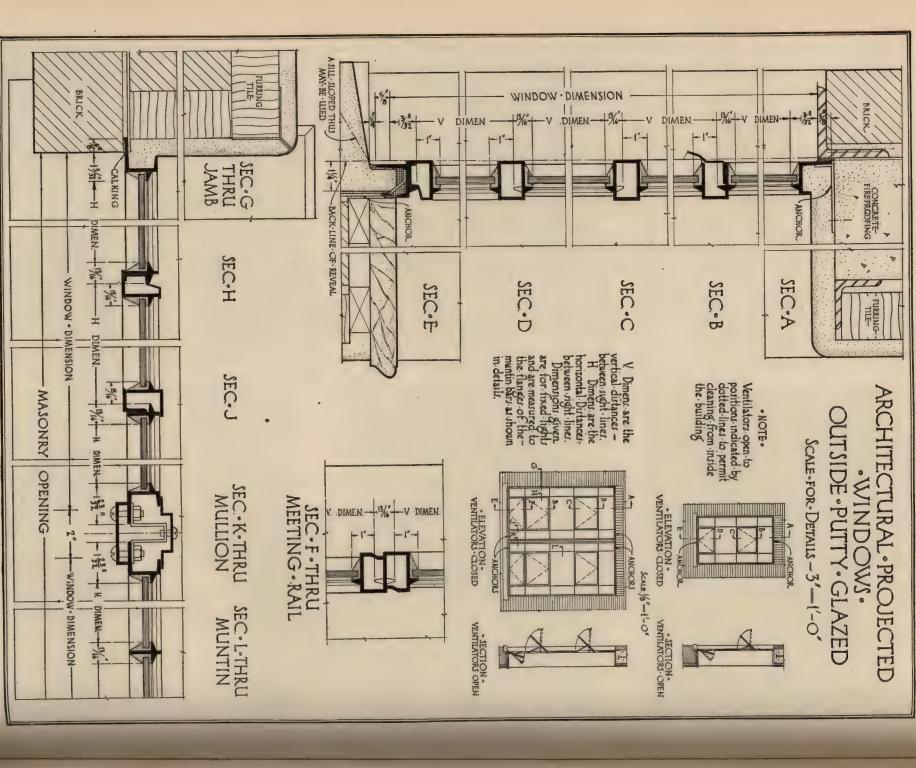
Theodore Roosevelt School, East Chicago, Ind. K. D. Norris, Architect. O. H. Hill Co., Contr.

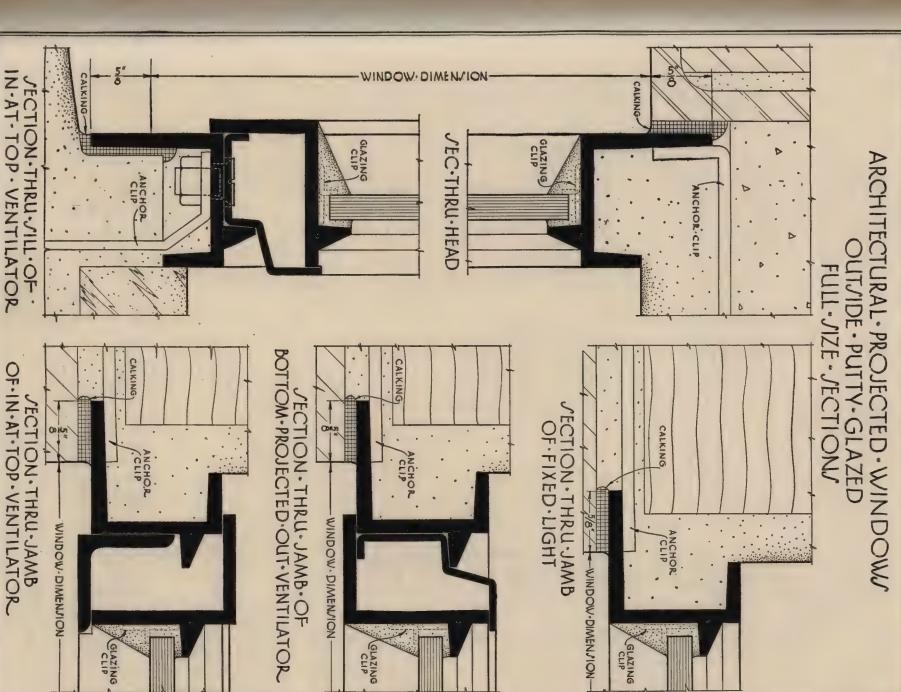
NATIONAL BUILDERS CATALOG

Refer to pages 28 and 29 for description, to page 31 for full size sections

LUPTON PAGE 30

NATIONAL BUILDERS CATALOG





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86

ARCHITECTURAL - PROJECTED

· SMODNIM.

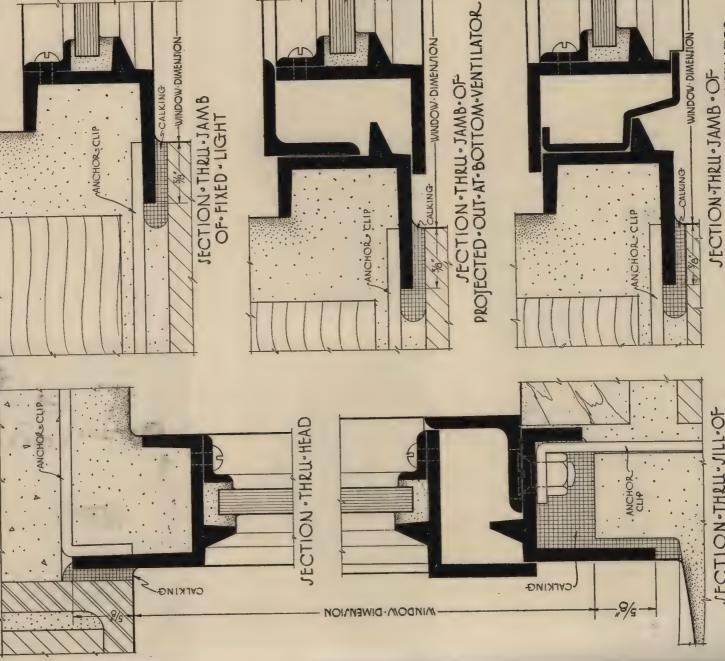
FURRING

CONCRETE

INJIDE - GLAZED

SCALE-FOR. DETAILS - 3"

FULL-SIZE - SECTIONS



JECTION-VENTJ - OPEN

VENTILATOR - CLOJED

ANCHOR

V. Dimens are the vertical distances between 19th lines.
H. Dimens are the horizontal distances between 19th lines.
Dimensions street between 19th lines.
Dimensions street lights and are measured to the flanges of the muntin barrar mount in the details.

SEC.C

MINDOM-DIWENTION

J.C.D

JEC.E

DIWEN-

ANCHOR

VENTY - OPEN

VENTILATOR - CLOJED

F- CANCHOR

Ventilators open to positions indicated by dotted lines to permit cleaning from inside the building.

JEC.B

DIWEN-

·NOTE.

JEC.A

ANCHOR CLIP

-WINDOW-DIMENSION

CALKING

-WINDOW-DIMENSION-

SECTION THRU JAMB OF FIXED LIGHT

PROJECTED-IN-AT-TOP-VENTILATOR ECTION-THRU-JILL-OF

JEC-L-THRU

JEC-K-THRU MULLION

子

JEC.H

JAMB JAMB

FURRING TILE

A JUL SLOPED THUS MAY BE USED

JYONE

ANCHOR

MEETING "RAIL

SEC. F. THRU

MUNTIN

JECTION-THRU-JAMB-OF PROJECTED-IN-AT-TOP-VENTILATOR

CALKING

Refer to pages 28, 29 and 32 for description and quarter size details

LUPTON PAGE 33

WINDOW-DIMENJON

DIMEN

- MASONRY · OPENING

WINDOW-DIMENSION

LUPTON STEEL COMMERCIAL PROJECTED WINDOWS

appearance is required than in the usual industrial tended for those buildings in which a more refined nasiums, laboratories, banks and club houses. schools, hospital service buildings, dormitories, gymings, such as warehouses, offices, market houses, factories, workshops and garages, commercial buildbuilding. They are used in industrial buildings, small Lupton Commercial Projected Windows are in-

pivoted windows. Muntins are spaced for either 12" ets similar to those used on the Architectural Prodows can be equipped with screens and shade brackor screen on the outside of the window is required, all with shades or venetian blinds. If a protective grille that there is no projection on the inside to interfere bars. The large ventilators swing out at bottom so jected Windows. ventilators can be made to swing in at the top. jected movement which eliminates the use of stay Sizes and general construction are the same as , or 14" x 20" glass. Ventilators have Lupton pro-Win-

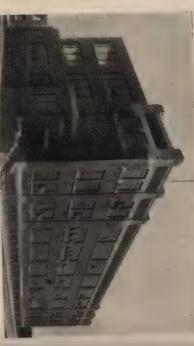
slight changes from standard design are approved and labeled by the National Board of Fire Underwriters. Lupton Commercial Projected Windows with



Commissioner of Motor Vehicles Building, Baltimore, Md. William Gordon Beecher, Architect. Consolidated Engineering Co., Contra.



R. J. Ederer Thread Co., Philadelphia, Pa. Wm. Steele & Sons Co., Engrs. & Contrs.



Ditzler Color Company, Detroit, Mich. Weston & Ellington, Archis. Otto Misch Co., Contractors



Women's Gymnasium, University of Colorado, Boulder, Colo.

Day & Klauder, Architects. Geo. P. Heinz & Co., Contrs.

Standard Types and Sizes

LUPTON STEEL COMMERCIAL

to the center of the opposite side. The fixed units shown under Pivoted Windows on page 44 and the dotted lines drawn from two corners of the ventilator be used in combination with the units shown on page Camber and Circle Head Units on page 36 can also Types and Sizes are shown on page 37. The part the window that can be opened is indicated by

Glass Sizes in Standard Windows

Glass in fixed lights is always either 12"x18" or 14"x20"; glass in ventilators is smaller as indicated in the diagrams at bottom of page 37.

Windows in Stock

The most useful sizes are carried in stock by Lup-

ton Dealers and therefore are more quickly obtained. These sizes are shown shaded gray on page 37.

The units not shaded on page 37, are not carried in stock by Dealers but a stock of bars, already cut and punched is always kept at the factory ready for assembling.

Construction

Frames—Frames are made of solid rolled steel special angle section 13%"x1½"x½". All joints are tenoned and tightly riveted.

ners and have the Lupton Projected movement. Each equipped with two bronze friction shoes and rustventilator is balanced on two steel arms and proofed flat steel springs which serve to hold it open in any reasonable position without stay bar or other Ventilators--Ventilators are welded at all four cor-

cause corrosion. There is less opportunity for moisture to enter and joint gives the appearance of a mitered joint with the least possible cutting away or distortion of the metal. The greater the external pressure the tighter the joint. Muntin Joints-The Lupton interlocking muntin

vided all around ventilators. Weathering-Two point contact weathering is pro-

side by side. They are made of rolled steel T-bar and bolts are furnished by Lupton. Details on page 46. are bolted to units with rustproofed bolts. T-bars and Mullions - Mullions are used between units placed

one above another in an opening. Details of design Imposts--Imposts are used where units are placed

are given on page 46. They are not furnished by

Mullion Covers—Covers to give a finished appearance to the mullion on the inside are furnished when specified, at extra cost.

Operation

Operation is by means of hardware illustrated and described on this page. Projected Windows should not be used where mechanical operators (described on page 50) are to be used.

square in openings prepared to receive them. Details of installation and methods of anchoring are shown on pages 46 to 49 See page 2. Windows should be set plumb and

windows are set. Grouting should be done by the mason after the

drain off. frame at the sill is left uncovered so that water will Note that at head and jambs the window is over-lapped 5%" by the wall but that the entire face of the

In building openings for single windows, clearance should be left at one jamb and at sill so that window

each shipment of windows. may be easily swung into place.

Detailed erection instructions are included with

Painting

See page 2. Windows are given a protective coat of dark gray paint, oven dried, in the factory.

Glass and Glazing single thickness glass. putty. See page 2. Windows are glazed on the inside with utty. Glass is held by rustproofed steel wire glazing ips. Always use steel window putty. Do not use

Screens and Shade Brackets

Screens can be furnished for all our standard units

without altering the sizes.

Open-in ventilators have an outside screen, openout ventilators are screened on the inside. Screens They are applied or removed from the interior. have metal frames and are covered with bronze wire.

page 10 for Residence Casements. Shade brackets are similar to the ones illustrated on

Installation Details

are shown on pages 46 to 49. Details are the same as for Pivoted windows and

HARDWARE

be furnished at extra cost when specified. Standard Hardware illustrated below is malleable iron. Hardware of the same design in solid bronze, polished, can



Used at top of Projected-In-at-Top Ventilators.
Note:—When Projected-In-at-top vents are beyond reach from floor a spring catch (No. 5) is used for pole operation instead of handle No. 308. Cam Handle No. 308

NATIONAL BUILDERS CATALOG



Used at top of all Projected-Out-at-Bottom ventilators.



Ring Type Cam Handle No. 141
Used at bottom of all Projected Out-at-Bottom
Ventilators. Mounted on universal clip.

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LUPTON STEEL PRODUCTS

CATALOG - NUMBER

5-234

NATIONAL BUILDERS CATALOG

- WINDOWS

STIN!

MANDARD - SIZES - AND - ATTACHMENT - DETAILS - FOR

CAMBER. OR. CIRCLE . HEAD. UNITY-NOT-OVER. 5-LIGHT. - WIDE

ARE-BOLTED DIRECTLY TO JOUARE-HEAD UNIT-BELOW

JTANDARD - CAMBER - AND - CIRCLE - HEAD - L

USED-WITH COMMERCIAL PROJECTED

LUPTON STEEL COMMERCIAL PROJECTED WINDOWS (Continued)

Standard Opening Widths for Commercial Projected Windows

Ordering Standard and Stock Windows

Standard and Stock sizes and designs are shown on page 37. Any sizes or designs other than those shown are special and require detailing in engineering department, take more time for delivery and cost more. Underwriters' labeled windows in standard or stock

sizes are special.

Ordering

2112 In ordering Standard or Stock Windows, time will be saved by giving us complete information on the following points:

0000

68. 10%. 33%.

Widths of Openings 14" x 20" Glass

Total Number of Mullion

No. of Lights
per Unit
Position of Each
Number Indicates
Position of Unit
in Opening

Widths of Openings 12" x 18" Glass

- 1. Shipping date desired (on non-stock sizes allow time for assembling).

1333

- 2. List windows and openings, giving the following information:

 a. Number of openings.
 b. Sizes of openings (see table at right and page 37 for standard sizes).
 c. Glass size (12"x18" or 14"x20")
 d. Quantity of each type of unit in each opening.
 e. Catalog numbers of each type of unit in each opening.
 *A method of doing this is illustrated below.
 - 3. Height of sill from floor. This will tell us whether any change in standard hardware is required
- 4. Whether or not ventilators are to be screened.

22,77

4, 4, 5, 4, 4 3, 5, 5, 5, 3 5, 4, 4, 4, 5 3, 4, 4, 4, 4, 3

23,22

22,22

4, 5, 5, 4 5, 3, 3, 3, 5 5, 5, 5, 5 4, 4, 4, 4

5552

15, 16, 17,

25,62

3, 4, 4, 3 5, 5, 5 4, 4, 4, 4 3, 3, 5, 3, 3

15,

330,38

4, 5, 5, 5, 4 4, 4, 4, 4, 4 5, 5, 5, 5, 5 8, 4, 4, 4, 5

286

- 5. Kind of wall fastenings required. This depends on the wall construction. Turn to details on pages 46 to 49 and specify by the numbers in the circles the type of attachments desired for head, jambs and sill. Drawing on page 49 shows number and location of anchors. When you do not specify type of wall fastenings the anchor 2472 or 1739 is furnished at sill
- Whether or not windows are to be drilled for shade brackets. 6. Whether or not windows are to bear Underwriters' labels.
 - *Method of Listing Windows

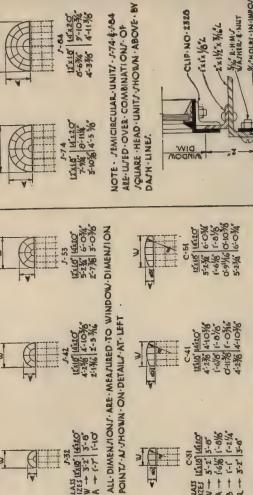
	, , ,	and an
No.	each no.)	opening,
Units	nber in one	of a single
Catalog No.	34161 stalog nur 34161 one catal 34161	(7) in case
No. of Units	ning) 1 same call 3 more than	kes (page ?
Glass	sed in ope 114"x20" units of th 14"x20" inits and	rams of size
Height	or more or mor	from diag
**Width	are are two 11'-4" re are two 12'-6%"	dimension
No. of Openings	Where there is only one unit used in opening 34161 34161 34.64 610% [14x.20"] 212-6x.6x.6x.6x.6x.6x.6x.6x.6x.6x.6x.6x.6x.6	**Get this



Heights of Openings

12" x 18" Glass

25 27 28 29 29



4-13/6 4-10/6 4-13/6 4-10/6

GLASS (ZAID) (47.20 SIZES (ZAID) (47.20 W + 3.2 | 3.8 W

IMPOST - TVPE - 1 FOR USE WITH 3-74 \$ -3-84.

C-41 4'2% 4'10% 1'6% 1'-0% 0'11% 1'-0% 4'2% 4'-10%

04A3 12.10 | 14.00 N - 5-2' 5-6' N - 1-6% | 1-8% B - 1-1 | 1-2% R - 3-2' 3-6'

DIWEN'

14, EMHS.

WINDOW DIMENSION - WIDTH 42.60 32.60 32.60 32.60 4-23/8 Broken lines indicate EXPONED GLAVY AREA

O IN - VOUARE - FEET

4 -- FOR 12 x18 GLAV -
13 -- FOR 14 x 10 GLAV ---· NOTE. 37.40 3-2" 3'-8' \$ 600 26.60 32/60 7.54 10.03 14"x20"-2"-55/8" GLĄ55 14 15 O %01-9 10-31/6 8-63/4 5'-2" 9'-346 6-23/6 3'-15% 7-8% 4-8" No OF LIGHTS

MINDOM - DIWENZION - HEIGHT

45.10

HEAD JAMB THE DIWENTION MINDOM

same as the masonry or structural opening required for that unit. See sketch at left for measure points.

Mullions—Mullion details and dimensions are the same as for Pivoted Windows. See page 46.

Imposts—Imposts are the same as for Pivoted Win-Dimensions-The Window Dimension of a unit Shaded Units are Dealer Stock Windows

219

419

210

12

219

218

210

212

218

OUTSIDE

Projected in al top KEY.

Projected out at bottom

11-111/6

3/6-,01

of vents

dows. See page 46.

Glass—Glass in fixed lights is full 14"x20" or 12"x18" in size. Border lights in ventilators are reduced as shown in diagrams at right to allow 1" for weathering.

Anchoring—For methods of anchoring see pages 46

Note—Dimensions of units, and the sizes and positions of ventilators must be exactly as shown in the diagrams; otherwise the window is a special. Windows can be listed using the method outlined on page 36. Use 14"x20" glass in preference to 12"x18" glass. The four and six light projected out-at-bottom vents may be replaced by projected in-at-top vents if specified at no added cost, but a longer time must be allowed for delivery.



LUPTON-COMMERCIAL-PROJECTED-WINDOWS STANDARD - TYPES - AND - SIZES

PLATE - NO

JULY - 1929

Refer to pages 34, 35 and 36 for description, to pages 46 to 49 for wall details

Continued on next page

SCALE

0

DETAILS · OF WINDOW · CONSTRUCTION

1930

NO

FOR DETAILS

SCALE

LIPTON COMMERCIAL PROJECTED WINDOWS

PLATE- -JUNE ~

PROJECTED · IN·AT·TOP·VENTILATOR HORIZONTAL - JECTION - THRU WINDOW DIMENSION JCREEN SECTION - 308 JECTION VERTICAL

FRAME - MEMBER SEC-103-ATTACHED SEC - 300 - WITH -SECTION - 319 BOTTOM-RAIL- OF-VENT SEC-

SECTION - 318

WINDOW - DIMENJION

MUNTIN SEC-300

OF-VENT SEC-318

SEC-300

OF-VENT SEC-318

ATTACHED WITH-SEC-335 SEC-300-

MUNTIN

SIDE-RAIL

MUNTIN

ATTACHED WITH-JEC-335

> (STRAIGHT-GRIP) IRON . CAM MALLEABLE NUMBER - 308 -HANDLE

STEEL · KEEPER NO . 2579

PROJECT OUT AT BOTTOM VENTILATOR

D

JAMB
PROJECT- OUT-AT-BOTTOM
VENTILATOR

- WINDOW DIMENSION -

CONNERS

LATCH SCREEN SCREEN

STATIONARY - MEMBER

SECTION - 319

TOP-RAIL- OF- VENT

RING-TYPE) NUMBER-141

BOTTOM VAIL OF VENT

JECTION - 319

STATION ARY · MEMBER

SECTION - 318

IRON-CAM

WINDOW-DIMENSION

CLIP-NO. 3105 MALLEABLE

JECTION-300 MUNTIN BAR

WINDOW DIMENTION UNIVERSAL

FRICTION

COLNERS

ARM ARM

5/8"

Ö

HEAD

(FIXED · LIGHT)

D.

JAMB (FIXED-LIGHT)

WINDOW DIMENJION

IRON PULL NUMBER-4861 DOWN-RING

MALLEABLE

JECTION - 318

ATTACHED-TO-MUNTIN TOP-RAIL-OF-VENT-

SEC - 319 WEATHERING . SEC - 375 MUNTIN-SEC-300 ATTACHED

DIMENSION

DIMENSION SEC - 300 OF · VENT SIDE - RAIL WITH SEC-103 SEC-300 MUNTINI

JEC-308

FRAME - MEMBER

FRAME

MUNTIN

SIDE-RAIL OF-VENT NDOW

MUNTIN

SEC-308 MEMBER

WITH-SEC-103

SEC - 319

SEC - 300

ATTACHED

WEATHERING JEC -103

BRACKETY-AT-TOP-OF-VENT

HORIZONTAL-JECTION-THRU-PROJECTED-OUT-AT-BOTTOM-VENTILATOR

NATIONAL BUILDERS CATALOG

NATIONAL BUILDERS CATALOG

PROJECT-OUT-AT-BOTTOM
OR ~ PROJECT-IN-AT-TOP-VENTILATOR

LUPTON PAGE 39

Refer to pages 34, 35 and 36 for description, to pages 46 to 49 for wall details

JAMB PROJECT: IN:AT:TOP VENTILATOR

WINDOW - DIMENSION -

Continued on next page

= LUPTON STEEL PRODUCTS =

COMMERCIAL PROJECTED WINDOWS

FULL-SIZE-SECTIONS

GLAZING CLIP

LUPTON STEEL PIVOTED WINDOWS

tion, being used in warehouses, loft buildings, less important parts of office buildings and stores, modern They can be successfully screened with many special applications of Pivoted Windows, such as the use of the stationary units as shop fronts for gift shops, tea rooms, etc., where a novel architectural Pivoted Windows are almost universal in applicaflat metal screens for use in dairies, etc. treatment requires a muntined window.

In industrial buildings, they usually form the larger part of the wall area and ventilators are sometimes connected to a mechanical operating device (described on page 50) giving mass control of ven-

glazed with wire glass and glazing angle stops, are labeled by the National Board of Fire Underwriters. than corresponding areas of masonry wall, provide abundant light and means of ventilation, and when Lupton Pivoted Windows have long been recognized in the Industrial field as highly efficient and reliable windows. They are usually less expensive tilation.



Gray Hosiery Co., Eddington, Pa. H. J. Eggly, Jr., Archt. Nelson-Pedley Constr. Co., Contrs.



Willard Candy & Chocolate Co. Philadelphia, Pa. Sinsohn, Engineer. Smith, Hardican Company, Contractors. Julian F.



Buick Service Station, Greenville, S. C. J. E. Sirrine & Co., Archts. Fiske-Carter Construction Co., Contrs.



E. Sutro & Son Co., Philadelphia, Pa. S. F. Glatfelter, Bldr. & Contr.



R. S. Pringle, Archt. Gude & Co., Contrs.



Coleman Lamp & Stove Co. Clearing, Ill. Foltz & Co., Archts. & Bldrs.



Pottstown Knitting Mills, Pottstown, Pa. Hugh B. Miller, Contractor



Whitehall Knitting Co., Philadelphia, Pa. Geo. Kessler Constr. Co., Contrs.

- LUPTON STEEL PRODUCTS

107

LUPTON STEEL PIVOTED WINDOWS (Continued)

Standard Types and Sizes

Standard types and sizes are shown on page 44. The part of the window that can be opened is indicated by dotted lines crossing from corner to corner of the ventilator. Some units do not have ventilators. Camber head and semi-circular head transoms are shown on page 43.

Glass Sizes in Standard Windows

OF Glass in fixed lights is always either 12"x18"

Windows in Stock

The most useful sizes, shown shaded on page 44, are carried in stock by Lupton Dealers. Other units shown can be quickly assembled from bars already cut.

Construction

Frames—Frames are made of solid rolled steel angle. All joints are tenoned and tightly riveted.

Muntin Joints-The Lupton interlocking muntin joint gives the appearance of a mitered joint The greater the external preswith the least possible cutting away or distorting of the metal sure the tighter the joint.

tact weathering is provided all around ventilators. Weathering-Two point con-

on pivots. There are no loose spacing washers. Adjustment is made in our factory and no adjustment is needed thereafter. Pivot pins are held in place with Pivots-Ventilators are hung 2" above their centers cotter pins.

(used between units placed Mullions—Mullions (used between units placed side by side) are made of rolled steel T-bar and are bolted to units with rustproofed bolts. Details on page 46.

Imposts-Imposts (used where units are placed one above another in an opening) are not furnished by Lupton. Details of design are given on page 46.

Mullion Covers—Covers to give a finished appearance to the mullion on the inside are furnished when specified, at extra cost.

Erection

See page 2. Windows should be set plumb and Setting and anchoring square in prepared openings. Settin details are shown on pages 46 to 49.

Grouting should be done by the mason after the windows are set.

by the wall, but the entire face of the frame at the sill is left uncovered so that water will drain off. At head and jambs the window is overlapped 58"

In building openings for single windows, clearance should be left at one jamb and at sill so that window may be easily swung into place.

Detailed erection instructions are included with each shipment of windows.

See page 2. Painting

putty. Glass is held by rust-proofed steel wire glazing Glass and Glazing See page 2. Windows are glazed on the inside with clips.

Screens and Shade Brackets

They are applied or removed from the interior. All screened ventilators are equipped with friction pivots exterior screen is used on the upper portion and an insect tight with ventilator in any position. Screens which allow them to remain opened in any desired Screens can be attached to all standard units. interior screen on the lower portion. position without the use of a stay bar.



The Lupton Pivot

Mechanical Operators tor Mechanical Operators

operating a number of ven-tilators from one station, are described on page 50.

LUPTON UNDERWRITERS' PIVOTED WINDOWS

SCUPTON UNDERWRITERS LABORATORIES, INC. NESPECTED IN SECULO SECUL

Lupton Underwriters' Pivoted Windows are furnished only when specified in bid and mentioned in contract.

visable to specify Underwriters' Windows and have the Underwriters' Label. This insures that the full measure of Wherever wire glass is used for fire protection, it is adsafety intended is actually secured.

Underwriters' windows are made in the same standard sizes as regular pivoted windows. See page 44. Where immediate delivery is important, dealer stock windows can be altered at our Philadelphia, Cleveland and Chicago Warehouses, at slight added cost, to conform to Underwriters' requirements. Windows cannot be altered to receive Underwriters' Labels after shipment.

Ordering Underwriters' Windows

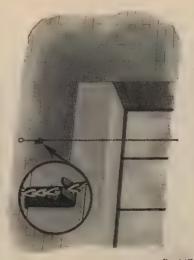
Underwriters' Labeled Windows are ordered in the same way as Standard Windows. See page 43. It is especially important to give the sizes and number of units in each masonry opening, and the exact details of head, sill and jambs as the Underwriters' inspector must have this information, before labeling the windows. The largest unit that can be used in a single unit opening is 84 sq. ft. in area. Neither width nor height can be over 12 ft. Where there is more than one unit in an opening, no unit can be more than 7 ft. wide and 12 ft. high, but there is no limit to the total width of Mullions must be anchored at head and sill. Glass is held by steel glazing angles and operation is by spring catch and chain with a fusible link which melts in case of fire and allows ventilator to close of its own weight. opening.

LUPTON PAGE 41

HARDWARE FOR LUPTON STEEL PIVOTED WINDOWS



View Showing Two Ventilators in a Unit,
One Above the Other
The lower ventilator is operated by Lupton Stay Bar,
the upper by Spring Catch and Chain.



Standard Hardware

Where Sill Height is Not Specified—We supply Lupton Stay Bars with all single ventilators. A stay bar is furnished with the lower ventilator of a unit having two ventilators. A Spring Catch and 12 ft. of Chain are furnished for the upper ventilator. Where Sill Height Is Specified—We furnish Spring

to fasten the chain to the wall below the window. Catch and Chain operation only for ventilators whose bottom edges are more than 6 ft, above the floor. Where necessary a special clip No. 2365 is furnished

NATIONAL BUILDERS CATALOG

LUPTON PAGE 42

Wall Clip No. 2365
Steel Clip used as alternate to Stay and Chain Holder
No. 3018, tay and Chain Holder

described above must be noted on the order.

Alternate Hardware

Any desired change from the Standard hardware as



Lupton Stay Bar in Close Position Mounted on the Universal Clip
Near its attached end the steel angle Stay Bar is pressed out to form a fulcrum. The
fulcrum causes the ventilator to be drawn up tightly against the frame and locked when
the Stay Bar is inserted in the clip provided to hold it. Five notches are provided for
holding the ventilator at various degrees of opening.

Friction Pivots

HOLE J- ARE-NOT PUNICHED ON TOP-OF JOUARE-HEAD UNIT-UNITED ON ORDER

JOUANE-HEAD

CAMBER CAMBER

Jean 3'mf-0" HEAD

MR.H.M.J

used in pivoted ventilator can be equipped with Friction by means of the locking handle shown in illustration. bars, chains or adjusters. Operation of ventilator is Where ventilator is beyond reach a pull down ring is Pivots (at added cost) when specified. These Pivots hold ventilators open without stay addition to handle for pole operation. Any

Window Cleaners' Anchors

others are specified Dickey Safety Anchors window cleaners' will be anchors are ordered furnished, unless

Continued on next page

Ordering Pivoted Windows

page 44. Any sizes or designs other than those shown are special and require detailing in engineering department, take more time for delivery and cost more. Underwriters' Labeled Pivoted Windows in standard or stock sizes are not special. Standard and Stock sizes and designs are shown on

Information Required

following points: be saved by giving us complete information on the In ordering Standard or Stock Windows, time wil

- 1. Shipping date desired (on non-stock sizes allow time for assembling).
- 2. List windows and openings, giving the following infor-
- a. Number of openings (see table at right and page 4 for standard sizes)

Number of openings.

- c. Glass size (12" x 18" or 14" x 20").
 d. Quantity of each type of unit in each opening.
 e. Catalog number of each type of unit in each
- *A method of doing this is illustrated below.
- 3. Height of sill from floor. This will tell us whether any
- change in standard hardware is required.
- 4. Whether or not ventilators are to be screened.

 5. Kind of wall fastenings required. This depends on the wall construction. Turn to details on pages 46 to 49 and specify by the numbers in the circles the type of attachments desired for head, jambs and sill. Drawing on ments desired for head, jambs and sill. you do not specify type of wall fastenings the ancho-2472 or 1739 is furnished at sill only. page 49 shows number and location of anchors.
- 6. Whether or not windows are to bear Underwriters' labels7. Whether or not shade brackets are wanted.

or from the table of widths on this

		Table
ł		2
		Table of Standard Opening Widths for Pivoted Windows
MT CT LL		Opening
-		Widths
		for
		Pivoted
	The state of the s	Windows

4			_						,															,				
000-	26'	25' 26'	24	23'	23,7	22'	21'	21'	20′	190	100	177	16'	16'	14.	14/3	1,50				10,4		6'	v.F	ńΝ	Widths of Openings	Glass	a
1 4 8	98%	0 %	61%	111/2"	0 CA O	00 1/4"	77%	101	74%	412	1 72	200	0%,	01/4	1178"	1178		11/1/2	10%	10%,	71%"	634	31%"	22%	278"	140		0 7
000	n (5)	0.04	- CF	0.4	n de C	n Cr	CPL 1	4	Cri (i)	دی خور	Coo si	ک دی ح	2 0	s Cot pi	دی ج	ن د د د	ې دي د	2	ی دی د	ىن بى	200	1010	jub i		2000 (1000)	of Units	Total	
S14.	-7-	4, 4, 4, 4, 4, 4	6,6,6	4, 4, 4, 4	5, 6, 6, 5		4, 4, 4, 4, 4	5,5,5,5	5, 3, 3, 3, 3		10:	6,4,6	0,0,0	, CA.	3.4.4.3	0,0	N COL 1	4 4 4	4. 3. 4.	ως ω 4η π ω ω	O. O. O.	in c	6	V1 12	(AN)	Position of Unit in Opening	Position of Each	No. of Lights
26	25	24	224	22	222	21	20	20	19	6 00 0	17	5,6	16	n Gr	144	14	ا دما دما دما دما	12	111	= 10	10	0000	6	CH N	(u)	Lights	Number	Total
Or On a	44	(At a	. W. #	UR.	إن (ي) إ	4	h 18h (نئ نن	iêr c	n (n h	10	ا در س	12) N	64 KJ	221	111	2	-131	NN	}> ₹	ے شو ق	R	R #	None	Mullions	Number	Total
32	320	30'	200	27'	277	26'	221	24	23'	222	20'	10/10/	19/	200	17'	17'	5,5	14'	¥ 50	<u>~</u> ~	12'	-0-	7,	0,4	بضة	Ope	Gi	14"
UI UI		01/4"	200	71/2"	14 1 20/10 14/10 18/10	21/4	1178	őó	91/2"	44	11"	1 00 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	00 2	200	088	37	767	111/8"	00 00	000	31/2"	10%"	31/8"	08/8	00 CA	Widths of Openings	Glass	× 20"

~o~a~	Lights	12" x 18"
	Heig	Glass
~ CA W Q W PO F	60:	14" x 20"
110000000	Heig	20" Glass

HEAD - UNITY - NOT-OVER - 6-LIGHTY - WIDE Y-TO - YOUARE - HEAD - UNIT - BELOW.	ALL DIMENJON ALCOMING AT 17 FOR N + 3-12 3-6 ALCOMING AT 17 FOR N + 1-46 1-26 A + 1-46 1-26	
EAD - UNIT - BE	-32 -42 -42 -42 -42 -42 -42 -42 -42 -42 -4	
NATTA CHAMENIT DETAIL (FOR	A - 1 - 1 - 1 - 2	
70		
IDOW.	NOTE - JENIC INT. JHONN ABOVE BY LINES LINES AT SHOOL AS SHOOL AS WALLES ARE WED OVER COMBINATION OF SHOOL AS WALLES ARE WED OVER TO MITT. JHONN ABOVE BY LINES AND WALLES AND WALLES AND AS WALLES	
MOLES-IN-IMP	CLIP-NO. 2328 CLIP-NO. 2328 L'X'I'''''''''''''''''''''''''''''''''	

USED-WITH-PIVOTED-WINDOWS. TANDARD CAMBER AND CIRCLE HEAD UNITS STANDARD-SIZES-AND-ATTACHMENT-DETAILS-FOR ARE- BOLTED DIRECTLY-TO JQUARE-

NATIONAL BUILDERS CATALOG

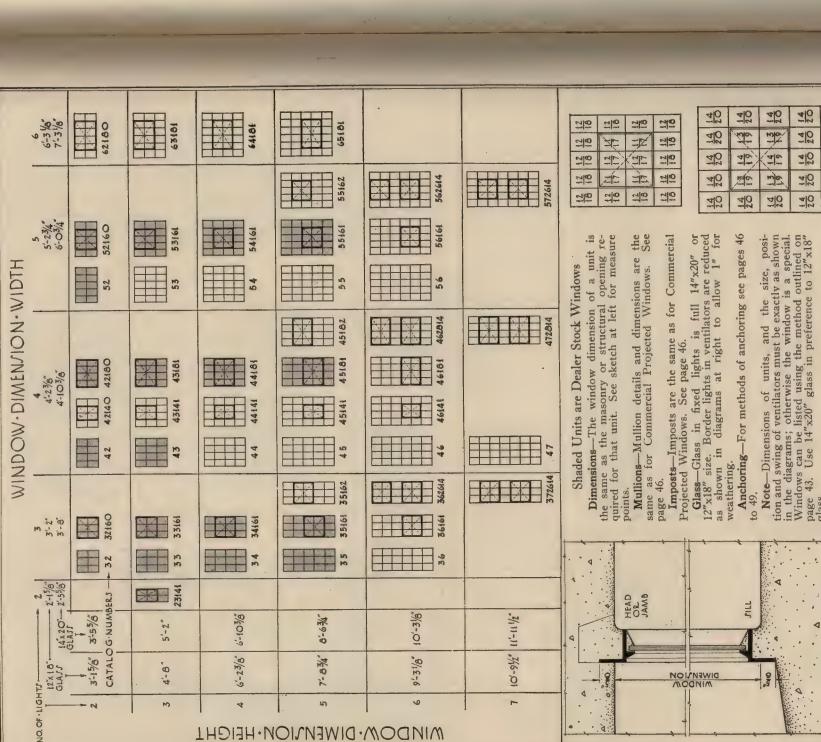
LUPTON PAGE 43

Continued on next

IMPOST . TYPE .1

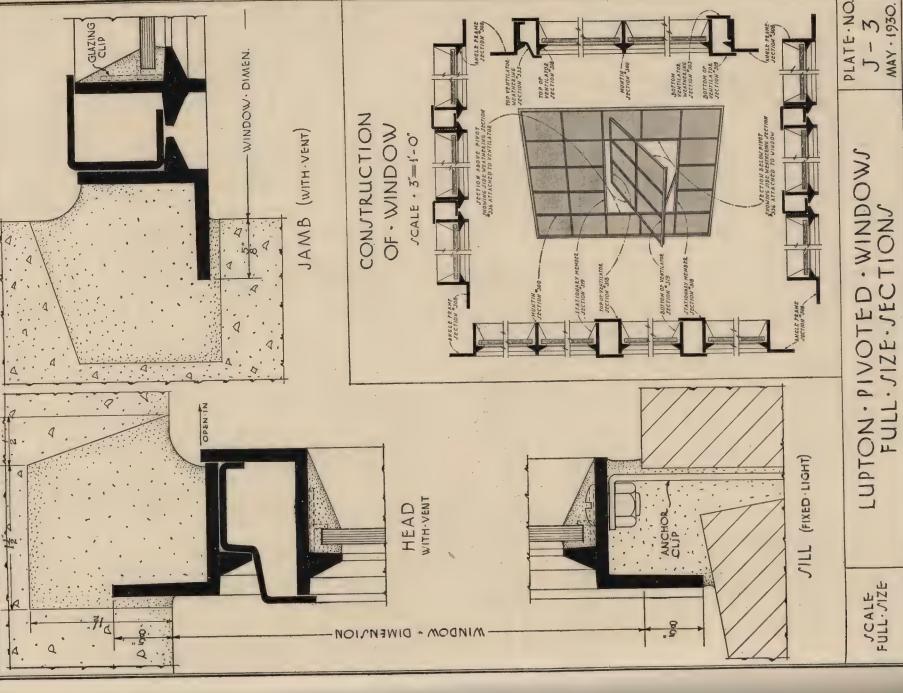
Jeans 3"- 1'-0"

110



	12	20	17	210		64	-121	~~!~	-103			4-
		31=		210		14	NO.	1010/	201		山一	•
	12 12 12 15	212	出得根	91 21 21 21 21 21 21 21 21 21 21		202	40	410	415		PLATE -	WAY.
14	17	ZÍ	=15	710		14 14 14 1	210	13 14	14 14 1 20 20 20 2		_	
572614	100	12	7 9	70]	410	40	201	102			
372614 47 47	Shaded Units are Dealer Stock Windows Dimensions—The window dimension of a unit is	the same as the masonry or structural opening required for that unit. See sketch at left for measure	Mullions—Mullion details and dimensions are the same as for Commercial Projected Windows. See	page 46. Imposts—Imposts are the same as for Commercial	Projected Windows. See page 46. Class. Class in fixed lights is full 14"x20" or	Border lights in ventilators are reduced in diagrams at right to allow I" for	weathering. Anchoring—For methods of anchoring see pages 46 to 49.	Note—Dimensions of units, and the size, position and swing of ventilators must be exactly as shown in the discreme: otherwise the window is a special		Optober	LUPTON . PIVOTED . WINDOWS	STANDARD - TYPES-AND - SIZES
	1		Jawe Jawe	. !			Jer Jer	Α Α		V	Jn7	5
	4	065 0		N	NOO!	MIN		OF	9	0	02	SCALE

NO. 2 Refer to pages 40 to 43 for description, to pages 46 to 49 for wall details



Refer to pages 40 to 43 for description, and pages 46 to 49 for wall details

NATIONAL BUILDERS CATALOG

WALL DETAILS FOR COMMERCIAL PROJECTED AND PIVOTED WINDOWS

Wall Details

Mullion and Impost details and methods of anchoring are the same for both Commercial Projected and Pivoted Windows. See pages 34 to 45.

Mullions

See drawing at bottom of page. Note that there are two sizes of T-bar mullions.

wide x 4 lights high or 6 lights wide x 3 lights high use small T-bar with stem turned in.

bar with stem turned out. With units not over 5 lights ride x 5 lights high or 6 lights ride x 4 lights high use small T-

DIMEN.

With units not over 6 lights ide x 5 lights high use large T-

wide x 5 lights bar with stem turned in.

With units not over 5 lights wide x 7 lights high or 6 lights wide x 6 lights high use large T-bar with stem turned out.

SILL

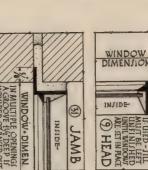
DIMENSION

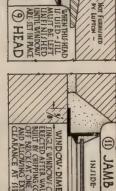
INJIDE

(E)

10 P

MINDOW DIMEN. 3 INSIDE JAMB HEAD GROUT 8



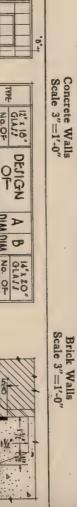




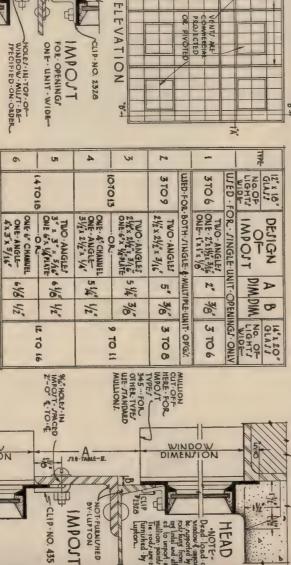


NCION JAMB-PLATES CAN BE WED
IF JINGLE WINDOW ARE
TO BE ERECTED AFTER
WALLS ARE BUILT WINDOW-DIME! INJIDE

Concrete Walls
Scale 3"=1'-0"



HEAD

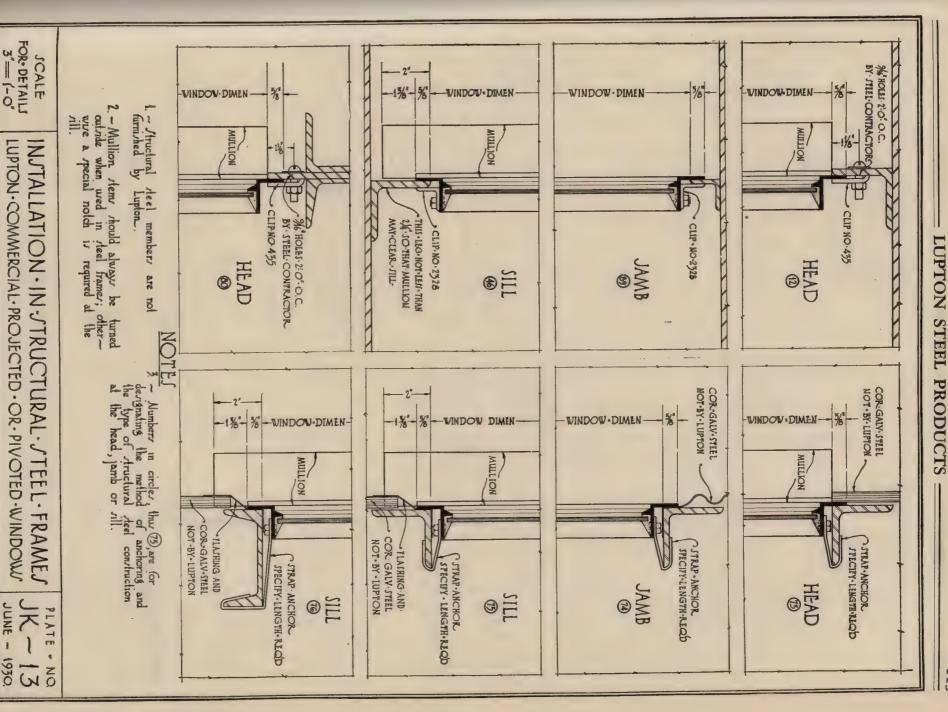


IVOTED OR COMMERCIAL PROJECTED WINDOW . MAJONRY · OPENING · WIDTH · (JEE · TABLE - OF · WIDTHJ) MULLIONS CAN BE LARGE OR SMALL T-BAR. STEMS CAN BE TURNED IN OR OUT ALTERNATE POSITIONS WINDOW-DIMEN JEC-A-A WINDOW DIMEN. TABLE - I Ø u FOR DETAILS MULLION PROJECTS INTO-SILL CALF DETAILJ LEC.B.

JILL OR 1733

Olai

WINDOW DIMEN-



NATIONAL BUILDERS CATALOG LUPTON PAGE 46

Continued on next page

5

NATIONAL BUILDERS CATALOG

LUPTON PAGE 47 See pages 34 to 46 LUPTON · COMMERCIAL · PROJECTED · OR · PIVOTED · WINDOW

Continued on next page

JUNE - 1930.

CONCRETE STEEL-REINFORCING

(OMITTED - AT - JAMB)

CANNOT - BE UJED - WHERE -VENT - EXTENDS TO - HEAD - OR

JAMB

-WOULD

(2) (2) (3) (4) (4) (4) (5)

LOW L. W.

MULLION - WITH PPECIAL

ANCHOR NO-2472 IMBEDDED IN-JOINT,

GROUT-AFTER-WINDOW

MINDOM-DIWENT

GROUT-NOT-BY-LUPTON

ARE-SET

JAMB

MULLION

MINDOM DIWEN

HEAD JAMB-SIMILAR

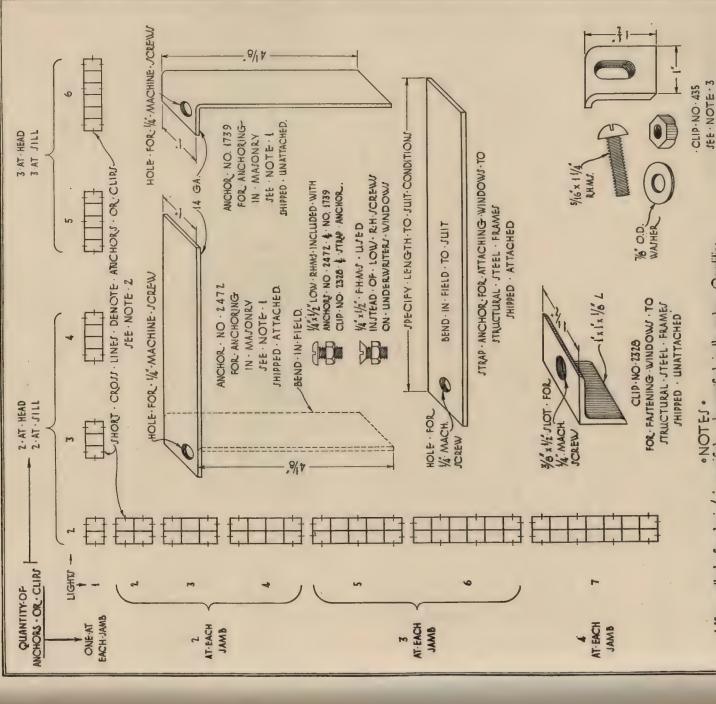
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ALKING. OTHERS.

点图

LUPTON

NATIONAL BUILDERS CATALOG



archor No.2472 or 1739 are furnished anchor No.2472 or 1739 are furnished for the sill only. Usually anchors No.2472 are furnished attached to the windows, but in some cases where quick delivery is required anchors No.1739 are shipped loose with the hardware.

JAMB-PLATE - NOT - FURN-

- PLASTER

-455 CLIP

BY-STEEL-CONTRACTO HOLES 20 OC

DIWEN

furnished when specified on order, at extra cost.

2-Jamb platerare shipped unallached and are bolted loandow when the window.

are being arected.

AINDOM DIWEN

OCATED OPPOSITE & OF.

LUPTON NOT . BY

rucco-

JAMB-PLATE

WIDTH

DETAILS SCALE 5'-1'O'

HEAD (

ITHED-UNIESS-SPECIFIED

JAMB (26A)

GROUT-NOT-BY-LUPTON

DIWEN

NUT & VASHER

MOUNIM-

SECTION

FULL-SIZE

11/2 2" 2½ OL 3"

GROUT-AFTER-WINDOW

SILL (4-10)

IMBEDDED-IN-JOINT - ANCHOR 2472

2. When anchoring, other than that de-scribed in Note 1, is required it must

be specified in the order. Quantities of anchors are furnished as indicated by the diagram at the top, and at the left side of this sheet; except as described in Note 3. Quantities as indicated

3.Where #435 clips are to be used, and we are informed that the steel contractor will punch holes 2.0° O.C. a dip is furnished for each hole.

ANCHOR BOLTS - IMBEDDED - IN WINDOWS - TO - STRUCTURAL STEEL - FRAMES - OR - FOR SECURING -WINDOWS - TO USED FOR ATTACHING MASONRY

LUPTON COMMERCIAL PROJECTED OR PIVOTED WINDOWS DETAILS . OF . CLIPS . AND . ANCHORS

PLATE . NO. 5 JULY - 1929

See pages 34 to 48

LUPTON PAGE 49

NATIONAL BUILDERS CATALOG

HALF-JIZE SCALE

PLATE . NO

AB-PLATE-DETAILS

TILE - WOOD - & JAN

HORIZONTAL SLOTS IN FLANGE OF WINDOW PERMIT ADJUSTMENT

=

HEX NUT &

DIMENSION WINDOW

- 1929

JULY

LUPTON.COMMERCIAL.PROJECTED.OR.PIVOTED.WINDOWS

FOR DETAILS

3'-- 1'-O"

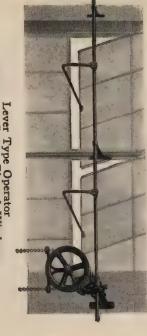
SCALE

See pages 34 to 47

LUPTON PIVOTED WINDOW OPERATORS

used to operate a number of pivoted window ventilawindows and will not be described here Operators are economical only on very long runs of tors from one control. Lupton makes two kinds of operators that can be second the Tension Operator. Tension The first is the Torsion Oper-

both types power is applied thru a worm and gear to a horizontal shaft made of 1" standard pipe supcan be open type or enclosed in an oil tight case. ported on malleable iron brackets. The Torsion Operator is made in two ty--Lever Type and 2-Rack and Pinion Type. Worm and gear in two types.



Lever Type Operator
Applied to Center Pivoted Windows

1.—Lever Type

ventilators. Ventilators are operated by means of malleable iron lever and steel vent rod as shown in illustration. Power is applied to worm and gear by means of a hand chain or a hand wheel and 34" round cold rolled steel vertical shaft. Limited to operation of 12 standard center pivoted

2.—Rack and Pinion Type

Ventilators are operated by means of a pinion gear mounted on the horizontal shaft and engaged in a rack which is attached to the ventilator as illustrated. Limited to 24 standard center pivoted ventilators Power is applied to

worm and wheel the same as for hand chain, or hand ated if desired. be electrically oper-Pinion Operator may ator. the Lever type oper-The Rack and gear by



Rack and Pinion Type Operator

LUPTON STEEL AIRPLANE HANGAR DOORS

When selecting doors for Airplane Hangars there are two factors of prime importance—strength to reis essential to economy in heating and to the safety of the valuable equipment housed within the hangar. Doors must be closed quickly against sudden storms speed and ease of operation. sist the pressure caused by high wind velocities and speed and ease of operation. The first is dependent while the second depends largely upon well designed hardware and correct installation. Ease of operation upon good structural design and sound construction, open must be reduced to the minimum. and in winter the time during which the doors are

men skilled by long experience in making huge doors for industrial purposes. Precautions are taken to satisfy these requirements. They are built by workbinding and seriously interfere with the proper operadoors not properly prevent the warping which may readily occur in large doors not properly fabricated and which will cause Lupton Airplane Hangar Doors are designed to

> tion of the doors. Three sizes of frame members are used, each one limited to certain door heights, to insure rigidity and resistance to wind pressure. The weight to move the larger doors without difficulty.
>
> Doors are made in two types, Straight Slide Type
> and Around-the-Corner Type. The Straight Slide and bottom rollers that carry the entire weight of the door are equipped with roller bearings and fittings for enabling a person of even less than average lubrication, allowing smooth and easy operation

CLEAR · OPENING · HEIGHT

O SEC

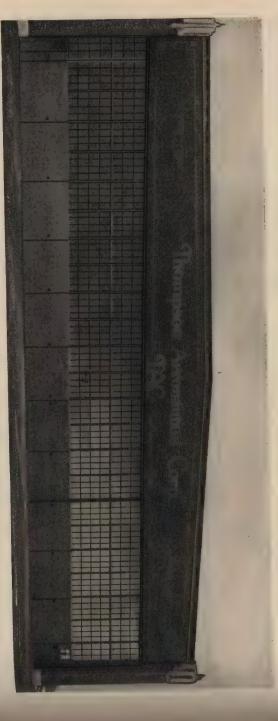
ner of the hangar and stand close to the side walls when open. A 4 ft. or 5 ft. wide end door is used at each end of the opening. This door is usually at each end of the opening. This door is usually hinged but may be arranged to slide straight back if Type the doors are arranged to roll around the corthe doors when open. With the Around-the-Corner Type is the simpler but requires a space of about 10 ft. or 20 ft. at each side of the opening for the storage of

750

AND-END-JWING-DOOR OF SLIDE - DOOR

/LIDE-DOOR

ELEVATIONS



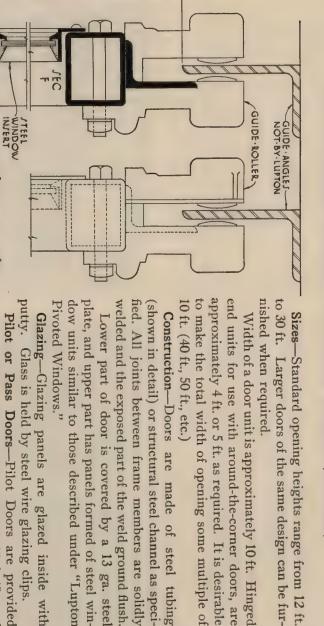
pson Aeronautical Corp., Pontiac, Mich.
The Roberts-Wright Co., Archts.
The C. O. Barton Co., Contrs.

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Continued on next page

LUPTON STEEL AIRPLANE HANGAR DOORS (Continued)



nished when required. Width of a door unit is approximately 10 ft. Hinged 30 ft. Larger doors of the same design can be fur-

approximately 4 ft. or 5 ft. as required. It is desirable end units for use with around-the-corner doors, are 10 ft. (40 ft., 50 ft., etc.) make the total width of opening some multiple of

elded and the exposed part of the weld ground flush shown in detail) or structural steel channel as speci-Construction-Doors are made of steel tubing

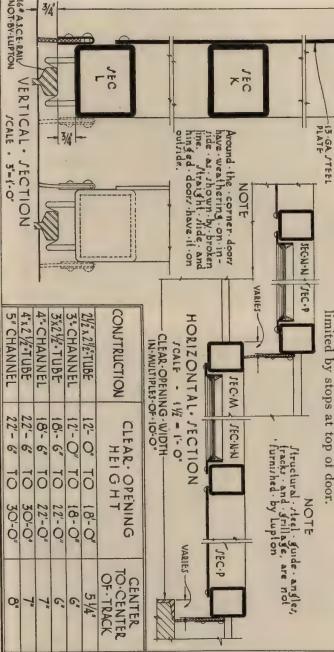
Pivoted Windows." plate, and upper part has panels formed of steel winow units similar to those described under "Lupton ed. All joints between frame members are solidly Lower part of door is covered by a 13 ga. steel

putty. Glass is held by steel wire glazing clips. Glazing-Glazing panels are glazed inside with

tubing and are equipped with cylinder locks. here required. They are made of 11/2"x25/8" steel Pilot or Pass Doors-Pilot Doors are provided

corner doors. thrust bearing is used to pivot rollers for around-thebearings and Alemite fittings for lubrication. A ball tom rollers running on 16 lb. A.S.C.E. rails. Doors structural steel angle. Bottom rollers have Timken re guided at top by two double rollers bearing on Hardware-Weight of door is carried on two bot-

are furnished at ends of tracks. Travel of door are furnished for locking hinged end doors. Bumpers locking door at any desired position. Cremone bolts Slide doors are equipped with a wheel lock for



LUPTON PAGE 52

Continued on next page

LUPTON STEEL INDUSTRIAL DOORS

Lupton Industrial Doors are made in a wide range of sizes and are suitable for exterior or interior use. They are used in factories, workshops, forge shops, chemical process buildings, boiler and pump houses, garages, automobile service and repair shops, power houses, warehouses, freight offices and car barns. Equipped with Panic Hardware they are suitable for exit doors in many types of buildings, requiring large

service buildings, in gymnasiums, swimming pool buildings and in dairies. Aside from their industrial applications they have been found suitable for use in hospital and school



Firestone Tire & Rubber Co., Akron, Ohio Osborn Engineering Co., Engrs.



Willard Candy & Chocolate Co., Philadelphia, Pa. Julian F. Simsohn, Engr., Smith, Hardican Company, Contrs.

NATIONAL BUILDERS CATALOG

value. acetylene welded to give strength and rigidity and to prevent corrosion of the inside due to entrance of ing or sagging and gives assurance that doors will open and close as easily after a long period of use as usage given them in buildings used for industrial puring unfailing service during a period of many years, Doors are of steel tubing with all joints solidly oxystand, successfully, the constant and sometimes rough Lupton doors of this type have been render-Lupton Steel Industrial Doors are built to withmoisture. This method of construction prevents warpproving beyond question their investment when they were first installed. poses.



Power House, B. F. Goodrich Rubber Co., Akron, Ohio



Special large doors

Betts Machine Co., Rochester, N. Y., H. S. Byers, Architect

STEEL INDUSTRIAL DOORS (Continued) LUPTON STEEL PRODUCTS

119

Standard Size and Stock Doors

LUPTON

Industrial doors are made in the standard sizes shown on the next page. They may be used either as swing or slide doors. The units shaded are kept in stock for quick delivery.

Where very large doors (larger than $10' \times 10'$ double doors) are required, they are made up specially of larger size members (3" x 2" tube).

-Stiles and Rails Construction-

Stiles and rails of doors less than 10' x 10' are made of 1½" x 256" x 14-gauge welded steel tubing, mitred at corners and solidly welded to form rigid joints and prevent entrance of moisture. Welds are ground flush with rails and stiles.

Panels

A 14-gauge steel panel is set in the lower part of the door and a steel window insert is set in the upper part to permit glazing. Glazing stops are rolled steel angle sections, attached with udylited (rustproofed) machine screws.

Frames

Frames are furnished only for swing doors and only when specified. They are made of 4" structural channel, top corners are bolted together with clips and bottom is braced with two spreader angles. Anchors of ¾a" steel plate spaced not more than 3 ft. apart are attached to Jambs.

Single doors with frames are shipped assembled in the frames. Double doors with frames are assembled in the factory for inspection and then taken apart for shipment.

See page 2. Doors have one coat of oven dried gray paint. Hardware Painting

Standard Hardware is shown in illustration. Mortise cylinder locks are not shown, but can be furnished when specified, for single or double, swing or slide doors. Locks can be

equipped with either one cylinder and thumb latch, or two cylinders. Cylinders can be master keyed. When specified, doors can be equipped with Sargent Door Checks and Von Duprin Panic Hardware. Doors more than 10' × 10' are equipped with Allith Prouty Strap Hinges. Wherever possible, hardware is fitted in factory and shipped unattached; except in the case of single swing doors in frames. In this case door, frame and hinges are shipped assembled together.

Erection

See page 2. Frames for swing doors should be set plumb and square, securely anchored to building structure. Tracks for slide doors must be level and fastened securely to wall as shown on plate R-3. Where slide doors are hung outside the wall and flashing is required over the track, this flashing is not furnished by Lupton

Glass and Glazing

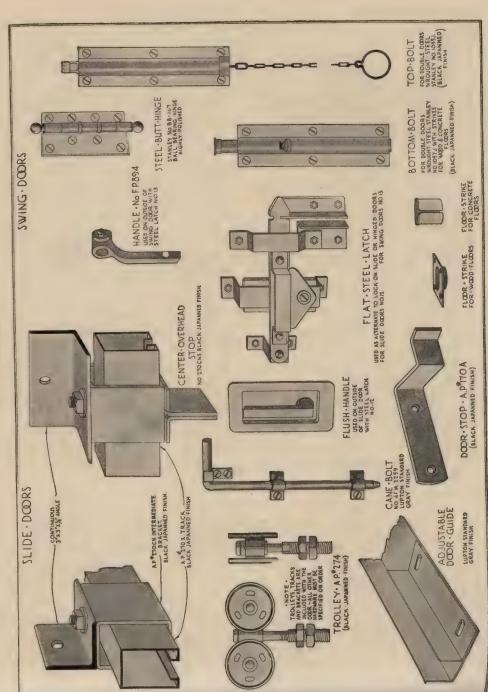
See page 2. Orders for doors do not include glass or glazing, but glazing stops are furnished, shipped attached.

Standard doors must have exactly same size and design as shown on plate R-1, otherwise the door is a special. In ordering, be sure to give the following information: Ordering Standard

Size and quantity (use Opening Size as shown on plate R-1)

- e wanted. State whether doors are swing or slide, open in or open out, right hand, left hand, or double. (See diagrams on Specify frames for swing doors if they are (Frames are not furnished for slide doors or fover $10' \times 10'$.) out, right hand, 1, pages 55 and 56.) ci 3
 - - Specify method of locking and type of lock,
- as door Specify any special hardware required such checks, panic hardware or bronze butts.

HARDWARE



LUPTON STEEL PRODUCTS

DOOR

DOOR

7126

7-0=

6-101/2"

SWING SLIDE

GLASS

143/4"

113/4

13 1/4"

OPENING

SWING DOORS -- 2-6" SLIDE . DOORS - 2-4"

SINGLE .

DOORS

4

DNING

4

SLIDE

4-0 31-10"

5-0" 4-10

3-01

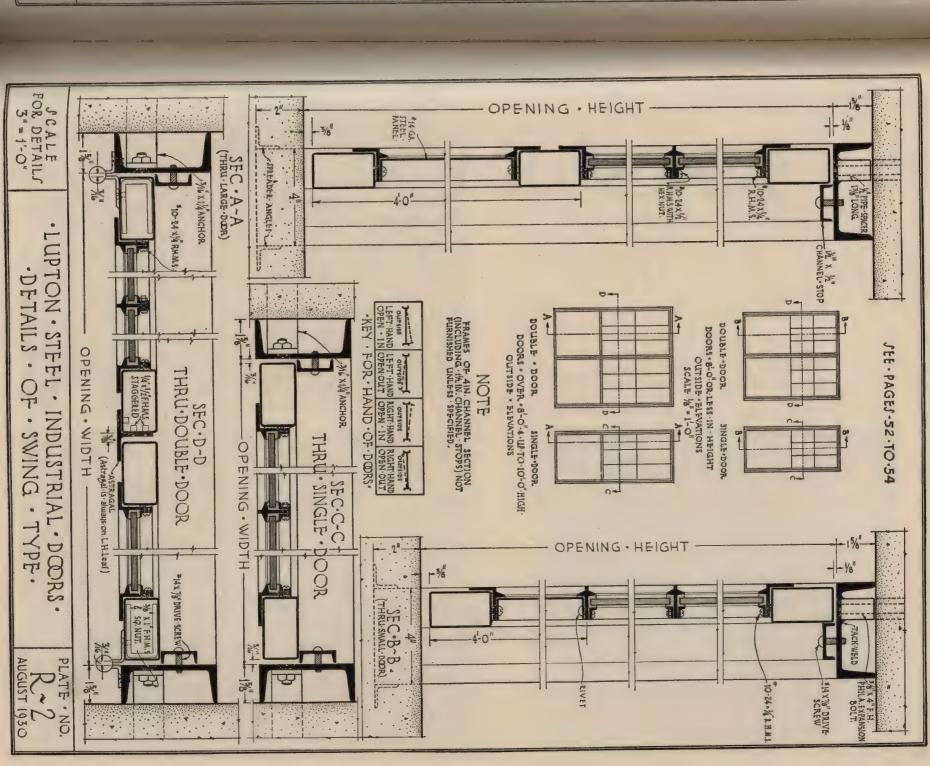
2'-10"

SIZES

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LUPTON STEEL PRODUCTS



7-0" SWING

STATE STATE

113/4"

143/4"

113/4"

131/4"

91-101 10'-0"

5-10" 6-0x

6'-10"

7-0"

8-0 7-10" 133/4"

6-101/2"

SLIDE DOOR

> SLIDE · DOORS -- 4-10" SWING - DOORS -- 5-0"

DOUBLE

DOORS

PNING

JLIDE

OPENING SIZES

0-0

9'-101/2"

34 "

7'-101/2"

22"

191

Dealer Stock Doors are shown shaded.

Dimensions—Dimensions given above are opening dimensions. See plates R-2 and R-3 for measure points.

Large Doors—Doors larger than those shown above are made of larger tubing. Where large doors are required, it is economical to use, if possible, doors of the following dimensions: UPTON STANDARD STEEL TYPES INDUSTRIAL Widths | Single Doors..... | 3' 0' | 3' 6' | 4' 0' | 5' 0' | 6' 0' |

Heights for single or double doors of any width listed above: 11' 0" 12' 0" 13' 0" 14' 0" 15' 0"

These dimensions are based on openings for swing doors. Openings for slide doors are smaller to provide overlap at head and jambs. 60 SIZES DOORJ PLATE AUGUST - 1930 ? NO.

9-101/2"

34

7-101/2"

22"

19"

Continued on next page

SCAL F FOR DETAILS 3° 1'-0"

PLATE - NO.
R. 3
AUGUST 1930

NDU STRIAL DOORS .

-LUPTON - STEEL - I

DETAILS · OF

· SLIDE · TYPE

+

Whitestal is study on LH. Leaf.

OPENING - WIDTH

123

LUPTON STEEL COMMERCIAL DOORS - LUPTON STEEL PRODUCTS -

buildings, power houses, freight office, etc. They can also be used in hospital and school service buildings, Lupton Commercial Doors can be used for exterior or interior doors in garages, automobile service staboiler and pump houses, chemical process tions and repair shops, workshops of all kinds, facgymnasiums, swimming pool buildings, locker rooms, dairies and farm buildings.

1/8 ×1/4 S.H. BOLT

END BRACKET A.P. 270 EN

SEE - PAGES - 52 - TO - 54

パメンタ" S.H.BOLT & TWO

3"X 3 X 14 ANGLE

openings the Industrial Doors should be used. Within They are of lighter construction than Industrial cause of their lighter construction they are limited to their size limit, however, Lupton Commercial Doors are a practical and economical product, sturdily built of formed sheet steel tubing and having corner joints Doors and are correspondingly lower in price. Beuse in openings 10 ft. x 10 ft. or less. For larger welded to insure permanent freedom from warping, sagging and sticking.

SINGLE-DOOR

TRACK AP 270 X TROLLEY AP 174

\$ WOOD SCREW)

DOUBLE-DOORS
DOORS: eld'-OR-LESS-IN-HEIGHT
OUTSIDE - ELEVATIONS
SCALE-1/6" = 1'-O"

-0

10-24 × 1/4"

WHEN STEEL LINTEL IS USED IT IS TAPPED FOR \$\int_{\mathcal{A}}\mathcal{A} \text{R H \cdot W \cdot S}.\ \text{THIS DIMENSION IS IF.}\)

2/1/2

MEATHERING

10-24 x 1/1 R.H.M.S. WITH-HEX.NUT.

units are kept in stock and can be delivered without recommend them for consideration wherever small can be arranged to swing or slide. These standard delay. Their good construction and neat appearance They are made to fit ten standard size openings and size doors are required.

RIVET

DOUBLE - DOORS

DOORS - OVER - 8-0" & UP TO -10'-O" HIGH

OUTSIDE - FLEVATIONS
SCALE /%" = 1-0"

SEC. B-B (THRU: SMALL: DOR)

OUTSIDE LEFT HAND

KEY FOR

*14-GA. STEEL PANE

RIGHT HAND HAND OF DOOR!

FLACHINGS FOR CUTSIDE SLIDE DOORS NOT FURNISHED BY LUPTON

-OPENING · HEIGHT

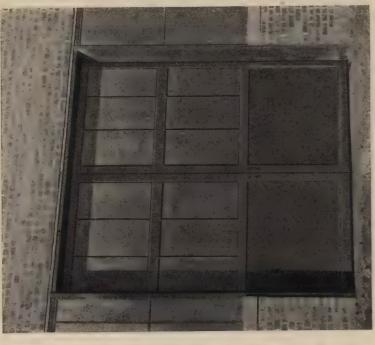
NOTE

THRU-SINGLE-DOOR

14-GA-WEATHERING -2/8-x2/8-x/4" L JTOP. 3/6-x2/8,3+1+14-BOIT WITH-Z-CINCH-UNITY

GUIDE

SFC-C-C



A pair of large Commercial Doors-Slide Type.



-DOOR GUIDE

THRU DOUBLE DOOR

21/4"

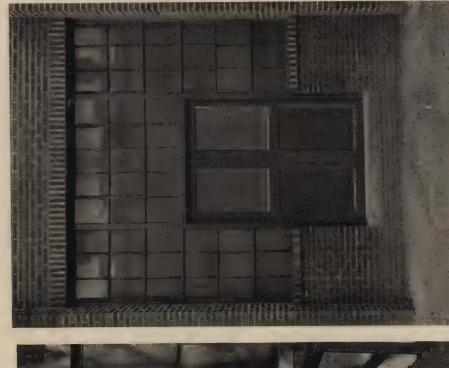
SEC.A-A (THRU LARGE DOR)

-DOOR GUIDE

AND HEX.

O'PENING - WIDTH

Commercial Doors are often used for vehicular entrances.



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LUPTON STEEL COMMERCIAL DOORS (Continued)

Sizes—Doors are made only in stock sizes shown at right.

Construction—Stiles and rails are made of 18 ga. steel. They are mitered and welded at corners of door and the welds ground flush. The lower part of door has a 16 ga. steel panel and the upper part is made to receive glass.

Frames—Frames are furnished for swing doors only and only when specified. They are made of steel plate. Flat steel anchors are provided at jambs and an expansion bolt at head.

Hardware—All necessary hardware (shown below) is included with doors except Hook Back No. 101 which must be specified if required. In ordering swing doors specify whether Mortise Lock or Lever Latch is desired. Erection—See page 2. Door frames must be set plumb and square securely anchored to building. Tracks for slide doors must be level and anchored securely.

Swing doors are drilled in shop for hinges and when Mortise Lock No. 97 is ordered doors are mortised and drilled to receive it. All other drilling must be done in

Single doors with frames are shipped assembled in frames. Double doors are shipped separately from frames.

Glazing—See page 2. See table at right for glass sizes. Orders for Doors do not include glass, but steel glazing stops are furnished, shipped attached. Always use steel window putty.

Painting-See page 2.

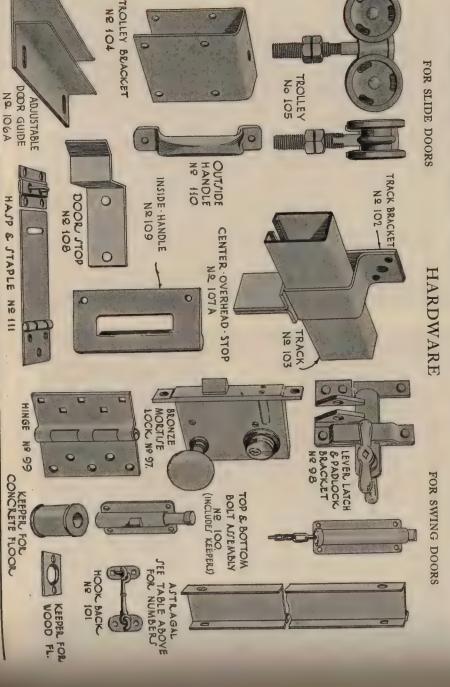
Ordering-When ordering give the following informa-

1—Symbol numbers of doors required (D-1, D-2, etc.)
2—Quantity of each type required.
3—Whether doors are to swing or slide and whether right or left hand. (See "Key for Hand of Doors" on next page.) If swing doors are ordered state also, a—Type of lock desired (No. 97 or No. 98).

b—If frames are required, give Door Frame Marks. (See table at right.)

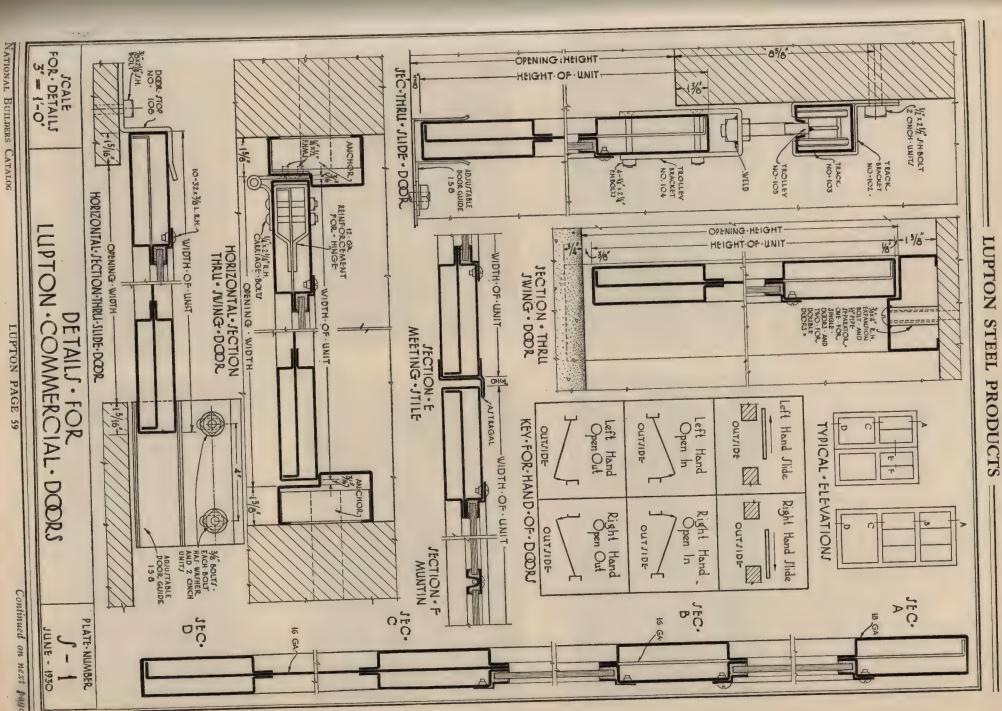
c—Whether or not Hook Backs are required.

D-22 MARK DOOR D-23 DF-72 SLIDE TYPE WIDTH HEIGHT **OPENING** 9'-9" 9'-101/1 "2038 6-101/1 6-101/2 STANDARD-SIZE'S SINGLE-DOORS DOUBLE DOORS 1035 *2037 *1036 8-0 SWING . TYPE 4-0 3-6 7. O. 10-0" *7395 8-O 7-0 *2394 ₹7393 BOTH-TYPES GLASS-SIZES 4-18% × 421/2 7-19% X 30% 6-1614" X 30% 2-18% ×42%



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LUPTON

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CORRUGATED WIRE GLASS BY LUPTON

Roofs and Skylights For Sidewalls,

Corrugated Wire Glass is often used as a covering for the entire roof area of a building. It is readily applied to single or double pitch roofs, sawtooth roofs, or back slopes of Lupton V-Type roof design. It can be used for sidewalls and for marquises or canopies.

Corrugated Wire Glass, either white or actinic, is a translucent material, which has several very definite advantages.

It transmits a finely diffused light with minimum glare and shadow. When actinic glass is used, the excessive heat from the rays of the summer sun is excluded without resorting to painting the glass.

It is easily erected and completely weatherproof.



Interior view of Dayton Arcade Market, Dayton, Ohio Actinic C.W.G. used. Geyer & Neuffer, Archts., Dayton, Ohio



Leland Electric Company, Dayton, Ohio Sawtooth Construction with C.W.G.



Wagner Electric Corp., St. Louis, Mo., Condron & Post, Engineers

Because of its corrugations, it develops greater strength under uniform loading and greater resistance to vibration and temperature changes than any other type of sheet glass of equal thickness. No skylight bars are used. The glass carries the load directly to purlins and curbs.

minimum and the corrugations permit rain to wash off dust and dirt, making the glass practically self-cleaning. Maintenance cost is practically eliminated because there are no bars to rust or corrode, breakage is reduced to a

It meets every requirement of the National Board of Fire Underwriters for fire retardment.



Indoor Tennis Court of Mrs. H. E. Talbott, Dayton, Ohio Peabody, Wilson & Brown, Architects



Ford Motor Company, Lincoln Division, Detroit, Mich. C.W.G. Used in Back Slope of Lupton V-Type Roof Design Albert Kahn, Architect. Walbridge, Aldinger Co., Contractors



Fordson High School, Dearborn, Mich. Van Leyen, Schilling and Keough, Archts. d over swimming pool. Note omission of wire guards C.W.G. used

CORRUGATED WIRE GLASS BY LUPTON (Continued)

= LUPTON STEEL PRODUCTS

Width of Glass

The maximum width of glass is 27%". Glass is laid edge to edge with 1/2" space between sheets. This 1/2" space is covered by a metal cap with an asphaltic Bolts spaced approximately 9" center to center, clamp the glass between the asphaltic lined cap and a metal inner strip.

Length of Glass-Maximum Spans

lowing pages, is desirable as it makes use of standard glass. Where glass is used in an upright position as in sidewalls, or in sawtooth roofs, where it is tilted no 5' 0" or 10' 0" out to out of curb, with a slope of 6" in 12" as shown for the Standard Skylights on fol-The unsupported length of glass should not be more than 5' 0" for skylights or roofs. A dimension of 5' 0" or 10' 0" out to out of curb, with a slope of more than 30° from an upright position, an 8' unsupported length of glass can be used.

Where the span requires the use of two lengths of are separated and cushioned with a strip of impregnated felt which also seals the joint against entrance glass, the two sheets are placed so as to overlap, and of moisture.

Condensation Drains

under the felt separating the two sheets of glass and under the special sealing strip at the lower curb. These tubes allow the condensation to drain to the outside of the roof and are used in place of condensaing condensation, drainage tubes can be provided Where it is necessary to provide a method of drainwhich are placed at the bottom of each corrugation tion gutters, attached to curbs and purlins.

C. W. G. SKYLIGHTS

vantage in using, if possible, one of the standard sizes shown on the two following pages. When skylights of C. W. G. are required, there is an ad-

Standard size skylights require the least amount of time for delivery and erection. Shipment can be made from Dunbar, Pa., within a few days after we receive the order, with complete information.

Material Supplied by Lupton

everything needed to make a weather-tight job. Setting instructions are packed in each crate. (Lupton will Sketch shows the materials supplied by Lupton for a standard skylight. It consists of corrugated wire glass (white or actinic, as you specify), flashing for upper curb, caps, bolts, caps, bolts, quote prices on erection if requested.) clips, sealing strips and elastic cement,

CAP

Work by Builder

Wood Curbs—Skylights of the types shown on following two pages are usually applied to wood curbs and this is the type of construction shown in the details. The curbs must may require greater thickness, or the use of tie rods or braces, to make not be less than 2 inches thick, but the height of the curb or its length curbs rigid and strong. A center pur-lin is required for Type B Skylights.

SKYLIGHT by LUPTON With all necessary fittings -

JANER,

THIS OPENING PREPARED BY

n is required for Type B Skylights. The roofing material can be carried up the side and back, and our top flashing and end caps will cover it. At the front or low curb, the roofing can be carried over the curb and no

Condensation gutters can be used if desired.

Joints at curbs, eaves, ridges and where the glass meets a different kind of material are made weather-tight by means of specially designed caps and sealing Joints at Curbs

Anchoring

strips.

concrete is done by embedding anchor clips or inserts curbs are shown on next two pages. Anchoring to steel curbs is by means of metal clips. Anchoring to in the concrete as poured, so that skylight may be bolted to these later. Details showing construction and application to steel or concrete curbs, sawtooth roofs and the use of C. W. G. with asbestos and metal Details showing method of anchoring to roofing will be sent on request.

Material for Fittings

Caps and fittings can be of any of the following materials: Copper—18 oz. cold rolled cover caps, inner strips and flashing, brass bolts, screws and clips. inner strips and flashing, rustproofed bolts and screws Galv. Steel-24 ga. (copper bearing) cover caps,

caps, inner strips and flashing. Bolts, screws and clips Aluminum .032" thick for cover and steel clips, all painted with aluminum paint. Aluminum—3-S8 Aluminum .032" thick for c

also of aluminum.

Leadsealed Steel—24 ga. steel, leadsealed cover caps, inner strips, and flashing, brass bolts, screws

Hoyt Hard Lead-6 lb. Hoyt Hard Lead cover caps and inner strips, brass bolts, screws and clips. and clips.

IN STANDARD SIZES

flashing is necessary. It is important that the construction be watertight. A cricket or gusset may be required to shed water on the upper side.

Other Types of Construction—Corrugated Wire Glass Skylights of standard size can be applied equally well to curbs of concrete, steel or any other structural material or direct to sloping roofs made of wood, corrugated steel, corrugated asbestos, steel deck, or any other type

Price List

may be obtained on request,

NO 2 / DALING MRIS

specify quantity, catalogue number, kind of fittings, kind of glass (white or actinic) and pitch. Although C. W. ard sizes with white corrugated glass Ordering standard skylights, In ordering standard skylights, prices covering all standand Copper, Galvanized Steel or Aluminum fittings may be had on request A list of

construction, whether curbs are wood, concrete or steel, etc. It is also important to specify the type of roof otherwise.

Ventilators

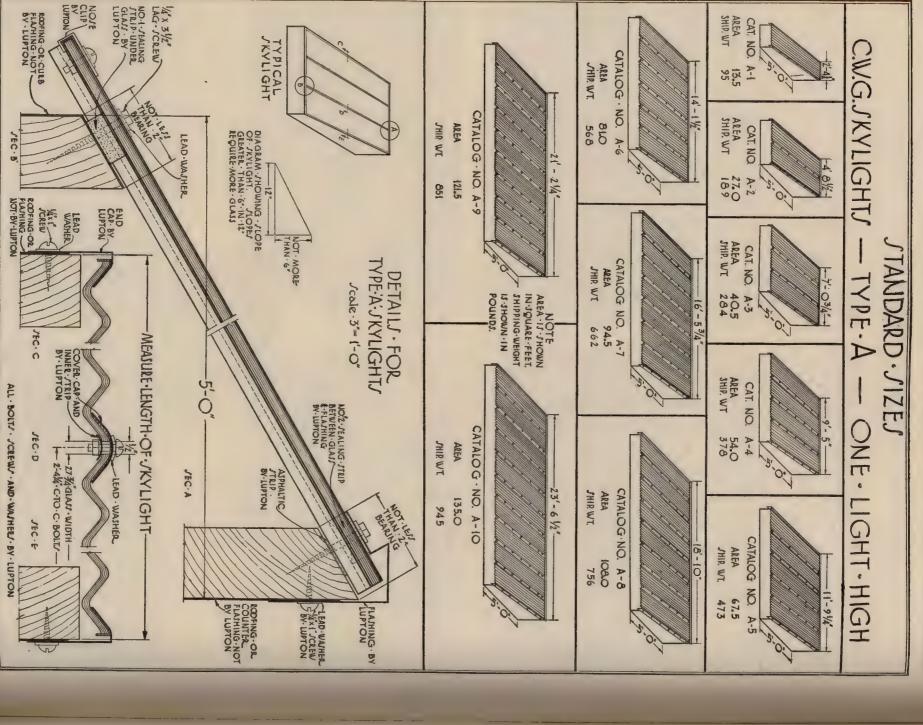
Ventilation may be provided if required, by means of windows, ventilators or fans.

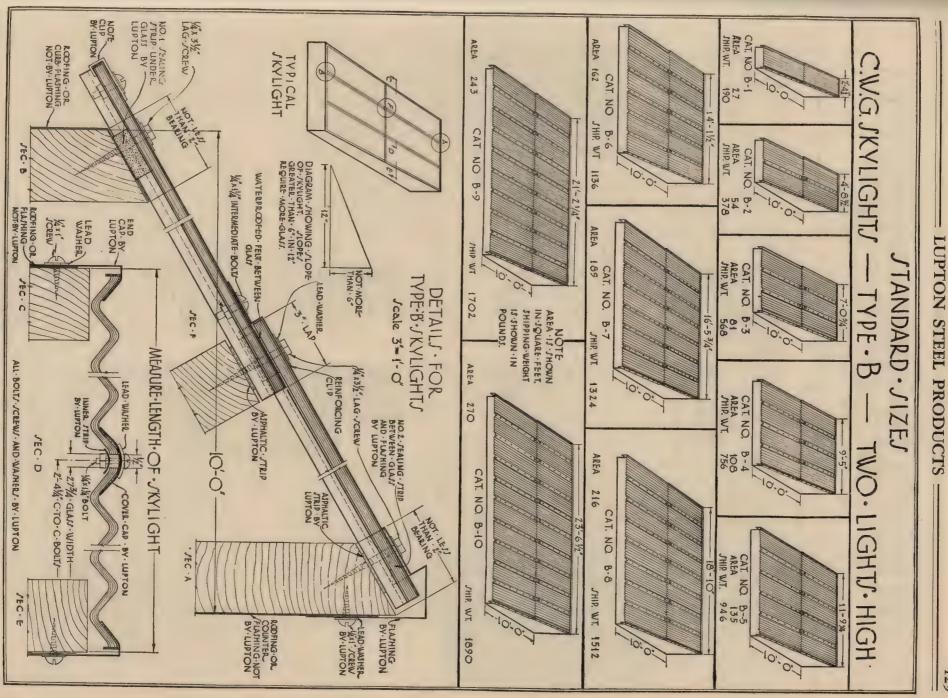
Continued on next page

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See pages 60 and 61 for description

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LUPTON

PAGE 63

ON PRODUCTS OTHER LUPT

Not Described in Detail in This Catalog

LUPTON STEEL PARTITIONS

Two types of Steel Partitions are built by Lupton. One type combining good looks, finish, durability and interchangeable unit construction is ideal for the well dressed office, while another type less expensive, but possessing equal strength and flexibility, is especially suitable for factories, etc. Finished in a variety of colors to suit individual require-



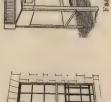
RAIN GUTTERS AND DOWNSPOUTS

Lupton manufactures a complete line of Rain Gutters, Spouts, Elbows and all the things necessary to erect them. A recent addition to the line is the Art-Bead Gutter. This is the half-round trough with an attractively designed edge which gives class and distinction to the edge of your roof and eaves. All articles are made of the highest grade materials.

LUPTON DETENTION WINDOWS

STEEL FACTORY EQUIPMENT

This window offers the unique advantages of a steel window plus the detention features but without the customary jail-like bars. The concealed spring balance permits the window to be opened within certain limits by the inmates but not far enough to let them escape. All mechanism is concealed. Windows are supplied with locks and in this way may be entirely controlled by the attendant.



A complete line of factory equipment is manufactured by Lupton. Some of the articles in this line are Work Benches, Shop Desks, Tool Cabinets, Work Tables and Bench Legs. Neat, strong, easily kept clean. Can readily be moved from place to place to take care of changing conditions. With reasonable care, they will give service for many

LUPTON STEEL SHELVING

Lupton Steel Shelving solves the ordinary storage problems and

can be readily adapted to take care of the most unusual requirements.

The maximum in service, storage space, and display value. Display Tables, Cutlery Tables, Comrers, Units combining display and storage, Screen Wire Racks, Platforms for heavy articles, Counter Merchandisers—anything needed to make a hardware store neat, inviting and brimming with sales, appeal. Every piece of equipment is made according to N. R. H. A. standards, sturdily built and finished in attractive colors. HARDWARE STORE EQUIPMENT

Made in Open and Closed types greatly multiply storage space, cut maintenance costs, conserve floor space, and are adaptable to difplay Type for stores. All types for storage purposes and in Dis-

STEEL PRINTING EQUIPMENT

This line includes Cut Cabinets, Job Jacket Files, Cut Storage Cabinets, Sorting Tables, Paper Racks, Retouched Drawings File and similar equipment. Made similar to our Steel Shelving. It can be taken down and re-erected without loss, is adjustable and may be added to as needed. Makes neat appearance, does not splinter and is fire-resisting.



TEXTILE MILL EQUIPMENT

Realizing the need for textile equipment that would reduce fire hazards, damage to goods from rough edges, and cost of maintenance, Lupton has produced a complete line for the textile mills. That it is successful is proven by the long list of prominent manufacturers that have installed Lupton equipment. This equipment greatly reduces the number of seconds and cuts overhead.

in detail in the foregoing pages are in no sense a other products of metal. For example, all the stainless steel store fronts and windows on the lower floors and in the tower of the Chrysler Building are Lupton products. We have made special steel fixtures for chain stores, and other businesses to fill a wide variety of requirements. Our facilities have wide limits. What limit to our ability to serve in making The articles listed above and those described

FENESTRA STEEL WINDOWS

Made by DETROIT STEEL PRODUCTS CO.

2250 E. Grand Boulevard, Detroit, Mich.

Oldest and Largest Steel Window Makers in America.

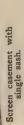
Products

Fenestra Steel Casements, screened or unscreened, Fenestra Basement Windows, and

screened or unscreened for office buildings, schools and public buildings. Fenestra Projected Windows and Fenestra Holorib Steel Roof Decks for all types of commercial and industrial build-OTHER PRODUCTS: Fenestra "Fenmark" Windows, FENESTRA CASEMENT DOORS, for residences and apartments.

Service

and dealer stocks. Factories at Detroit, Mich., Oakland, Calif., and Cleveland, Ohio. Look for our representa-Enin your local telephone book. gineering Sales representa-tives in 271 cities. Local dealers throughout the United States. Rush shipments of Layout and design service from Detroit or any District standard units from company Office, free on request. mediate estimates by tive under



The Fenestra "Blue Book," a complete catalog of all Fenestra products, profusely illustrated, will be found in Catalogs and Literature

Reprints of in-

Vol. A. Sweet's Architectural Catalog.

dividual sections suitable for drafting request, showing details of installation room or contractor use, sent free on in various types of construction.

Fenestra Steel Casements

Fenestra Casements, screened or

but glass and steel casement putty should be purchased units may be combined side by side or one above the Easily opened without touching the screens. locally. By the use of vertical or horizontal one coat. Glazing is done after erechardware. Sash is an easy hung and the entire window is painted Spring glazing clips are furnished with the windows of standard types and sizes and are unscreened, are made in a wide variety supplied complete, sash and frame and tion in the building.

Fenestra Screen Casement Windows

other to fill practically any window opening.

steel frame of the screen provides a metal to metal coning fly-tight and insect-proof. The especially designed tact around the entire perimeter which makes the openhardware operates through the screen so that the window can be opened or closed and locked without touching the The Fenestra Screen Casement Window is new.

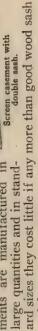
fenest

Method of Operation

open on rolled steel extension hinges, fitted with brass pins oper-These new casement windows ating in bronze bushings. times, and makes it possible to clean both sides insures easy operation window from the inside.

Economy of Using Fenestra Casements

It is important to remember in comparing the cost of sashquired—the especially designed solid, rolled steel sections meet with double, overcontact that is as window with a good weatherments are manufactured in large quantities and in stand-Fenestra Casement Windows with the vertical sliding type of window that these modern steel windows will not require pulleys, weights, or strip. Because Fenestra Case-Inside trim can Weatherstripping is not reusual also be eliminated if desired. weathertight as the frames, weight-boxes, hardware. lapping cord.



Fenestra Basement Windows

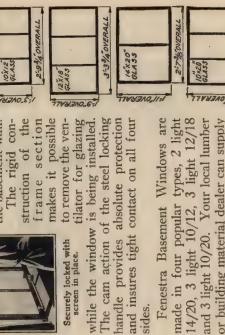
ment window, they are neat appearing, weathertight, will not shrink or warp or rattle, and come already equipped with all necessary hardware Fenestra Basement Windows will greatly increase the light and ventilation in your base-Made of the same type of solid, rolled steel sections as the casethe makes it possible ready to install in consection the basement wall. struction of The rigid frame ment.

to remove the ventilator for glazing The cam action of the steel locking handle provides absolute protection while the window is being installed Securely locked with screen in place.

mullions

made in four popular types, 2 light 14/20, 3 light 10/12, 3 light 12/18 Fenestra Basement Windows are and 3 light 10/20. Your local lumber or building material dealer can supply you with these windows direct from stock.

2:934" OVERALL



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LUPTON

can we do for you?

NATIONAL BUILDERS CATALOG

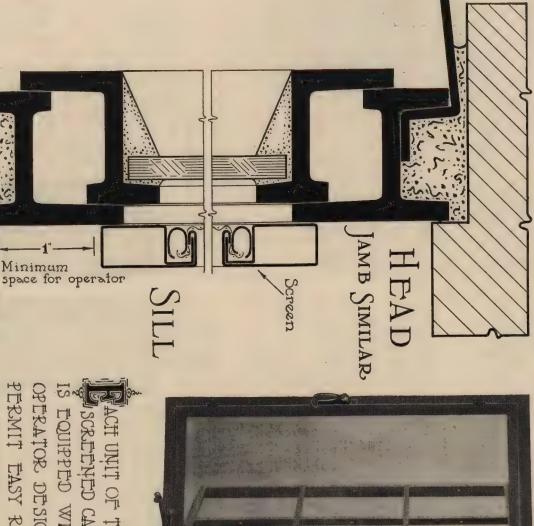
LEMCO CASEMENTS

Manufactured by LUNDELL-ECKBERG MFG. CO., INC.

JAMESTOWN, NEW YORK

High Grade Standard and Custom Built Steel Casements Solid Bronze Casement Hardware Write for Our Complete Catalog

LEMCO - STANDARD - SCREENED - CASEMENTS



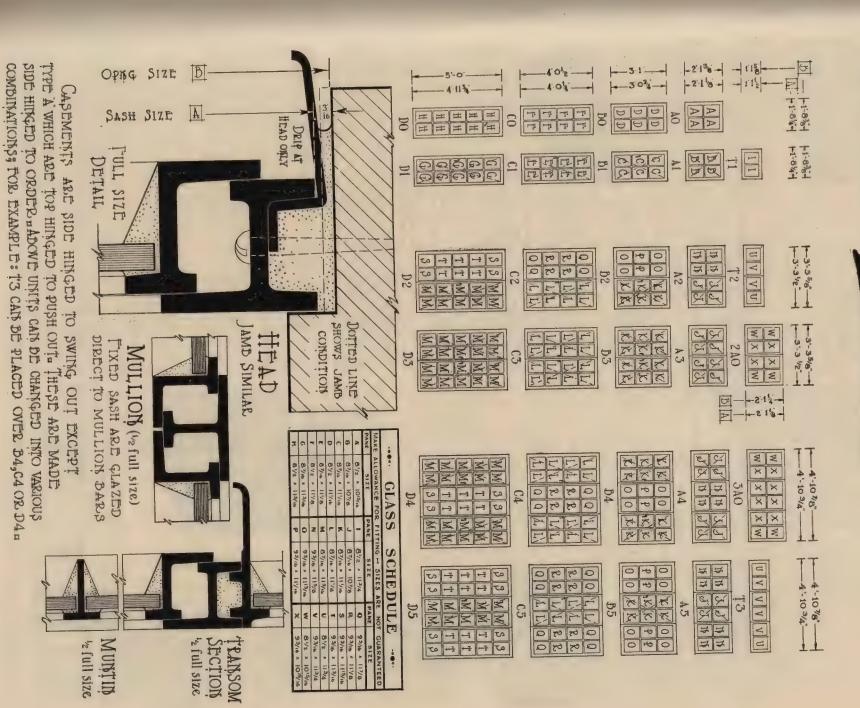
SCREENED CASEMENTS
IS EQUIPPED WITH AN PERMIT EASY REMOVAL FOR EACH UNIT, THESE FACILITY IN WINDOW OF SCREENS AND FOR OPERATOR DESIGNED TO SAST ARE FURNISHED IN SCREEN IS OPERATION. SEPARATE SIZES . Down STANDARD & SCREENED CASEMENTS FURNISHED SPECIAL

SHOWING APPLICATION OF SCREEN AND SILL CONDITIONS FOR TULL SIZE DETAIL OF STANDARD SASTI OPERATOR'S TICE

NATIONAL BUILDERS CATALOG

STANDARD

CASEMENTS



STEEL WINDOWS VENTO PUTTY

SASH COMPANY Made by VENTO STEEL

MICHIGAN MUSKEGON Stocked by over 2,700 Lumber and Building Material Dealers in United States and Canada

The Original Puttyless Steel Window

PUTTYLESS STEEL BASEMENT WINDOWS; PUTTYLESS STEEL FACTORY WINDOWS; DOWS, and SASH OPERATING DEVICES. STEEL BOUND BASEMENT SCREENS PUTTYLESS STEEL COAL CHUTES STEEL THRESHOLDS

New U. S. Pat. July 30, 1929 Covering 11 Claims

CHTS MIC OFZ THE STATE OF THE PARTY OF THE P

Window will not stick, bind or sag, and can be opened in winter or summer as opening at top breaks away any ice. out.

ment Windows are made in 9 standard sizes, all taking standard glass sizes. Sizes—Vento Puttyless Steel Base-No cutting, fitting or special glazing required. cial sizes to order.

Sizes)-

Reduces glazing expense and insures a

of cork.

clean job.

These windows are puttyless. Glass is held by patent clips against an air and water-tight cushion

Vento Puttyless Steel Basement Windows

The best win-

dows to keep basement secure and well-lighted. Pass

Standard Frame Sizes (Using Standard Glass

.31% in. ...231/2 in..

2 lights wide; Glass 14 in. x 20 in.; Masonry Opening 31% in. x 23 in. Weight 21 lbs. Type 2 LT-14x20

than wooden sash windows

and outlast them for the

life of the house.

Material—Frame is heavy gauge copper steel, bridge

50 to 80% more daylight

Type 3 LT-10x12

Type 2 LT—10x12
Special Lavatory Window 2 lights wide;
Glass 10 in. x 12 in.;
Masonry Opening 23/2
in. x 15 im. Weight

3 lights wide; Glass 10 in. x 12 in.; Masoury Opening 3334 in. x 15 in. Weight 18 lbs.

.33% in.

39% in.

welded at all corners into solid unit 2" wide with anchorage fin in center. Sash is 1"x1"x1/8" tee bar, elec-

trically welded at all points of mun-

tins and corners.

Sash opens at top for venti-

Operation-

Patent Glazing Clip

lation, locking at bottom even when window is open, and

electrically

construction,

Basement

Type 3 LT—10x16
3 lights wide; Glass
10 in. x 16 in.; Masony Opening 33%
in. x 19 in. Weight
22 lbs. Type 3 LT--12x18
3 lights wide; Glass
12 in. x 18 in.; Masonry Opening 3934
in. x 21 in. Weight

Type 3 LT—10x20
3 lights wide; Glass
10 in. x 20 in.; Masonry Opening 33%
in. x 23 in. Weight
23 lbs.

. 33% in..

31% in..

ni TS.

Type 3 LT-12x20 3 lights wide; Glass 12 in. x 20 in.; Ma-sonry Opening 3934 in. x 23 in. Weight 23 lbs.

when window locks securely

1

is closed.

has a 58" out-

Type 3 L.T.—10x24
3 lights wide; Glass
10 in. z 24 in.; Masonry Opening 3334
in. z 27 in. Weight
28 lbs.

Type 2 LT.--.14x24
2 lights wide; Glass
14 in. x 24 in.; Masonry Opening 31%
in. x 27 in. Weight
in. x 27 in. Weight

Finish-Vento Metal Ship Paint, positively rust-

Installation-These windows can be delivered to

ALL DPENING

3/8" condensation ledge at bottom of pane of glass. All water runs side watershed at bottom and a

the job in one load and glass set later at builder's The Vento patented glazing clips save the cost of putty and speed up glazing, which may The three-flange steel frame, with center flange properfectly into concrete block, frame or cement conjecting, anchors frame. No time lost in plumbing. be done by anyone. convenience.

> and Muntin. (Top) Detail of Basement Installation through Head and Detail of Basement Window Section through Jambs as

NATIONAL BUILDERS CATALOG

struction

Continued on next page

Vento Puttyless Steel Utility Windows Vento Puttyless Steel Mullion Basement Windows

The mullion enables you to



frame. Setting is a one-man job. The bolt tightens from the inside. If the space between mullion bar draws the Mullion Bar firm all along the window above and below the Vento flange and when tightened Bolt fits just gauge your basement winopenings to handy stock sizes. dow from the inside. If the sp and window is filled with Steel Mullion Basement Window.

Vento Puttyless Steel Storm Window and Combination cement it makes a solid concreted covered jamb. Screen

Keeps the basement warm, and therefore lessens Vertical Mullion Steel frame serves as a Cross Section

storm sash in winter, and removing the glass and in-Vento as an outside screen merely pane size summer,-by Screens. stalling the cost of winter heating.

(2 ft. 8 in. wide x 2 ft. 95% in. high) 6 LT 10x16

> This combination Storm Sash and Outside Screen frame is 15%

in one

cheaper than a wooden storm sash and screen, and furthermore will not get out of shape, warp, bind, sag, decay, besides being vermin and rodent-proof. Vento furnishes pane size screen with all storm sash -but no glass.



or copper screen or storm The Vento Metal with a 16-mesh galvanized Each Vento basement tapped ready to be fitted drilled and window is window.

Bound Outside Screen shown has a steel frame made half oval bar with rust-proof brass screws. Easily removbronze screen cloth is used. It is held in place by 1/2" 16-mesh galvanized or able at any time for installing new screen mesh of 34"x38"x1/8" channel bar.

ment windows, or the Vento Utility Window. State Adaptable to either the single or mullion style basesizes required when ordering.

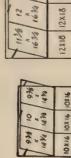
Vento Metal Frame Pane-size Screens

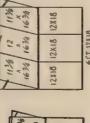
This screen is designed to fit in pane in place of glass, and is furnished in all the standard sizes as shown on galvanized or bronze cloth. To install, It is metal bound 16-mesh screen, previous page.

We furnish this screen in special sizes for Combination Storm Frame. remove the pane of glass by releasing the puttyless glazing clips, and set screen and clips back in place.

Be sure to specify type of frame when ordering. Pane-size Screen.

For use in small stores, warehouses, barns, shops, high basements, filling stations, portable school houses and residential garages. One of the strongest and best steel windows made for general use. Every joint and connection is electrically welded, making a solid steel window. Frame is 1½" x ½" teebar, giving adequate strength, rigidity and anchorage. Glazes with same ease as all Vento with same ease as all Vento Puttyless windows. Opening at the top means dry interiors, and enables fitting with outside metal bound Vento 16-mesh







(3 ft. 8 in. wide x 3 ft. 5% in. high)

14X20 14X20 14X20 14 × 18 3/4 18 3/4

Two or more of these windows can be set together by using Vento Vertical T Bar Mullion as shown in

connection with other mullion windows on

(3 ft. 2 in. wide x 3 ft. 55% in. high) 6LT 14x20 this page. Finished with Vento Metal Ship

Paint, rust-proof.



Vento Puttyless Steel Coal Chutes Details of Wooden Installation.



Sizes—
No. 10 Home Size—Steel paneled door. 22" x 16" x 10" overall.
No. 11 Home Size—Wireglass paneled door. 22" x 16" x 10" overall.
No. 13 Store Size—Vire glass paneled door. 32" x 22" x 14" overall.
No. 12 Store Size—Steel paneled door. 32" x 22" x 14" overall.
Glass or steel panels are interchangeable.
Hopper optional at slight addi- No. 11 Size Open, Showing tional cost. No. 13 Size Vento Chute.

NATIONAL BUILDERS CATALOG

ANACONDA COPPER SHEET, ROLL, STRJ

Manufactured by THE AMERICAN BRASS CO

MILLS AND FACTORIES WATERBURY, CONN. GENERAL OFFICES

ANSONIA, CONN.
TORRINGTON, CONN.

WATERBURY, CONN. BUFFALO, N. Y.

LETROIT, MICH. KENOSHA, WIS.

CANADIAN MILL: Anaconda American Brass Limited, New Toronto, Ont.

New York, N. Y., 25 Broadway
Newark, N. J., Military Park Building
Boston, Mass., One Forty Federal St.
Provinence, R. I., 131 Dorrance Street
Philadelphia, Pa., Widener Building
Atlanta, Ga., The Healey Building
Pritsburgh, Pa., Oliver Building

OFFICES AND AGENCIES CLEVELAND, OHIO, Union Trust Building
DAYTON, OHIO, Third National Building
CINCINNATI, OHIO, Chamber of Commerce Building
CHICAGO, ILL., 111 W. Washington Street
St. Louis, Mo., Planters Building
Houston, Texas, Post Dispatch Building
San Francisco, Cal., Russ Building

ANACONDA SHEET COPPER, ROLL COPPER and ECONOMY STRIP COPPER for roofing, rain-pipes, etc. sheathing, flashing, cornice work, gutters,

Deoxidized Copper Tubes, see page 234. For Anaconda Brass Pipe and Anaconda

and unvarying dependability. Quality of Anaconda Sheet Copper
Anaconda Sheet Copper is 99.9% pure, and guaranteed
by the world's largest and most experienced manufacturers of copper and brass products. Manufacturing procpractical experience, insure correct working properties esses, developed during more than a hundred years of

The Economy of Rust-proofing

A nation-wide investigation shows that the average life throughout the country of rustable sheet metal for exposed service is only 6.7 years. Anaconda Copper used free, indefinitely, because it cannot rust. or the same purpose, properly installed, will last trouble-

Furnace gases and polluted atmospheres, characteristic of large cities and industrial areas, and the high humidity along seacoasts and river valleys, have little effect on copper. From every standpoint,

an important economy. rust-proof sheet metal work is

roof flashings, value of the property materially enhanced by the use of copper for spouts and other sheet metal work. entirely eliminated, and the resale repairs and replacement may be crease in first cost, the expense of At a comparatively slight ingutters, down-

Copper Flashings ent those clusive ceilings, cause an-and are costly to repair.

Flashings, Gutters and Rain-pipes of Anaconda Copper Valleys and flashings are integral

mers, etc., should be of 16 oz., soft (roofing temper) copper. Metals results. Roof valleys and flashings and excessive expense are the usual through and leak, serious damage parts of the roof; when they rust

or later must be replaced. repainting and repair, and sooner of rustable metal, require constant Gutters and rain-pipes, when made

vide permanent water-tightness. less durable than copper will not pro-Copper Rain-Pipes and
Make a lasting rain-disposal system, one that requires no painting, no
replacement. is as lasting as its utility.

"Standard 16 oz." permand are available "Standard 16 oz." economical. Anaconda Copper for this purpose is not ence shows that metal less durable than Gutters and permanently stamped in the rain-pipes of the

Anaconda Roofing Copper

throughout the country.

the metal are available from leading manufacturers

weather-proof For roofing, copper is unsurpassed. It is fire-proof and rust-proof. mended and used by the foremost architects and builders. dormer windows and For covering porches, entrance

fasten a 30 or 40-year roof with nails that rust and lose their hold in 10 years. The cost of nails of with any of the better roohing used for nailing copper-work, or materials. Only copper nails should be It is false economy to

Roofing Copper for Bay
Windows
Adds a note of distinction,
and its beauty increases
with the years. is negligible. Anaconda Copper, compared with the total roofing cost

Other Places Where Rust-proof Construction Anaconda Bronze is a most economis important

ited only by accidental breakage. ical and satisfactory material for screen Rustable wire, on the contrary, soon It cannot rust and its life is lim-

is only a temporary preventive against rusts away. fills the mesh, obscures the outlook, and Screens of Anaconda Bronze Wire Painting, which is costly

and will not sag or bulge. are not only rust-proof and therefore Canot rust-needs no require no painting; they are strong its natural color adds and will not sag or bulge.

Bronze Screen Cloth

and becomes unsightly when the thin plating wears off.
For lasting good appearance and true economy solid
brass or bronze hardware should be used. Its beauty Hardware of brass-plated steel rusts sooner or later

Anaconda Service

Large stocks of Anaconda Copper Sheets, Rolls and Strips at the mills of The American Brass Company and in the warehouses of leading distributors throughout the country, make possible prompt deliveries to all sections.

CONTINENTAL ROOFING PRODUCTS

Made by CONTINEN TAL ROOFING MILLS

Division of

THE RUBEROID CO.

OFFICES: NEW YORK, N. Y., CHICAGO, ILL., BOSTON (Millis) MASS., ERIE, PA., BALTIMORE, MD., MOBILE, ALA.

Products

STANDARD AND MASSIVE ASPHALT SHINGLES, Unit

and Roll Roofing, Building Papers, Roof Coatings and Cements. OTHER PRODUCTS: Asbestos Shingles, Built-up Roofs

Continental Asphalt Shingles

colors and in several weights and sizes. a beautiful, durable, fire-safe roof at a moderate cost. These shingles come in a wide range of styles and Continental Asphalt Shingles are designed to provide

Size 12 by 16 inches. Approximate weight 312 lbs. to the square; packed four bundles to the square.

Massive Unit Shingles

is completely saturated with time-defying, weatherarmor-like surface of colorful, non-fading minerals. heavy coating of asphalt, in which is imbedded the Some of these colors are illustrated at the right. resisting asphaltum. This in turn is sealed in with a Every fibre of the strong felt base of these shingles

or burning brands can ignite them. They have the Inc., and carry their label. approval of the National Board of Fire Underwriters, Continental Asphalt Shingles are fire-safe. No sparks

Booklets Upon Request

inquiry to the nearest office. be gladly forwarded upon

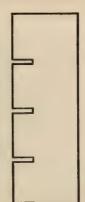
request.

Address your

Descriptive literature of any Continental product will Size 13½ by 36 inches. Approximate weight 225 lbs, per square. 76 shingles to the square; packed three bundles to the square.

Massive Hex 2-Tab Shingles

Size 121/3 x 36 inches, approximate weight 225 lbs. to the square; packed three bundles to the square. 3-Tab Giant Artstrip Shingles



Square-Tab Strip Shingles

Made in 10 by 36-inch size, approximately 197 lbs. to square; packed two bundles to square; and in 12½ by 36-inch size, approximately 249 lbs. to square; packed three bundles to the square.



Size 12 by lbs. to the Massive Square-Tab Strip Shingles 36 inches, approximately 245 square. Packed three bundles to the square.

Continental Massive Unit Shingles-Nile-green

RUB-ER-OID SHINGLES AND ROOFINGS

Made by RUBEROID MILLS

Division of

THE RUBEROID CO.

OFFICES: New York, N. Y., CHICAGO, ILL., BOSTON (Millis) MASS., ERIE, PA., BALTINORE, MD., MOBILE, ALA.

Products

STANDARD AND MASSIVE ASPHALT SHINGLES, Unit and Strip.

OTHER PRODUCTS: Asbestos Shingles, Built-up Roofs and Roll Roofing, Building Papers, Roof Coatings and Cements, Waterproofing Compounds and Protective Paints.

A Genuine Ruberoid Roof for Every Purse and Purpose

No matter what type of building you wish to roof, there is a fire-resisting *Genuine* Ruberoid Roof to meet the conditions imposed and to fit your pocketbook.

Each class of Genuine Ruberoid Roofs—asphalt shingles—asbestos shingles—or roll-roofings—represents the utmost in beauty and in quality—dependability that translates itself into years of satisfactory service.

Nature's Choicest Colors-Blended by Experts

You need no longer guess about the proper colors or color blends for your roofs. Genuine Ruberoid Shingles



Genuine Ruberoid Massive Hex 40% thicker than usual shingles

NATIONAL BUILDERS CATALOG



Genuine Ruberoid Massive Hex



Genuine Ruberoid Square-Tab

are surfaced with nature's choicest non-fading colors, scientifically blended by color experts.

As a result, you have a wide choice of shingles, unit and strip, in bright greens, blended browns, warm reds, rich purples and shaded grays—fine graduations of color tones that express roof individuality and good taste. All bear the Fire Underwriters' label of approval.

Booklets Upon Request

Regardless of the style or price homes you build or the roof lines you remadel, you will want to see these colorful, durable, fire-resisting roofs chosen for their beauty by color experts.

Tell us the type of building you wish to roof or re-roof and we will gladly send you descriptive literature and color charts so that you may make the proper roof selection. Mail your inquiry to the nearest office listed above.

SAFEKOTE ASPHALT SHINGLES

Made by SAFEPACK MILLS

Division of

THE RUBEROID CO.

OFFICES: New York, N. Y., CHICAGO, ILL., BOSTON (Millis) MASS., ERIE, PA., BALTIMORE, MD., MOBILE, ALA.

Products

STANDARD AND MASSIVE ASPHALT SHINGLES, Unit and Strip.

OTHER PRODUCTS: Built-up Roofs and Roll Roofing, Canvas Porch and Deck Covering, Building Papers, Roof Coatings and Cements.

gray, a glowing deep-red and a bright nile-green. A most pleasing color combination is reproduced on this

Safekote Massive Shingles are made in three types; Units, Square-Tab Strips and Hex-Strips. The units are 12 inches by 16 inches and weigh approximately 312



Safekote Massive Shingles

Safekote Massive Shingles are 40% thicker than the usual asphalt shingles. This extra thickness provides more than extra life. It assures greater beauty—for each butt casts deep shadows which give the roof massiveness.

This beauty is further enhanced by the distinctiveness of the mineral finish used—a rich softness of color that reflects quality, style and good taste.

The colors of Safekote Shingles cover a complete range of beautiful shades, including the much desired tones of valley-green, midnight-blue, a deep blue black, a sparkling tweed-



Safekote Massive Hex-Copper Green Tone

lbs. to the square. The square-tab strips are 12 inches by 36 inches and weign approximately 245 lbs. to the square. The hex-strips measure 13½ inches by 36 and weign approximately 225 lbs. to the square.

Regardless of the design or weight roof you want, or the price you wish to pay,

one of these Safekote Massive Shingle Roofs will appeal to you. The fireresisting qualities of all these shingles are approved by the Board of Underwriters' Laboratories, Inc., and bear their label.

Write your nearest office for descriptive literature of Safekote's full line of products.

WATSON ASPHALT SHINGLES

Made by H. F. WATSON MILLS

Division of

THE RUBEROID CO.

OFFICES: New York, N. Y., Chicago, Ill., Boston, (Millis) Mass., Erie, Pa., Baltimore, Md., Mobile, Ala.

STANDARD AND MASSIVE ASPHALT SHINGLES, Unit

Cements, Asbestos Insulation Materials. and Roll Roofing, Building Papers, Roof Coatings and OTHER PRODUCTS: Asbestos Shingles, Built-up Roofs

Importance of Selecting Suitable Roofing Material

resist year after year—driving rains, cutting sleet, hail and snow and the "drying out" effect of the blazing sun. Shingles are made to endure. They will successfully most important items to be considered in the building The selection of suitable roof covering is one of the Watson Massive Individual and Strip

fire resisting and bear the label of approval of the Board ditions imposed and to fit every pocketbook. in designs, weights and thicknesses to meet varying conditions imposed and to fit every pocketbook. All are of Fire Underwriters' Laboratories, Inc. Style Range—There is a wide range of shingle styles

number of attractive colors, in shades and blends to harmonize with the architectural style of your home. There are bright greens, blended browns, warm reds, rich pur-Distinctive Colors-Watson Shingles are made in a



Watson Massive Unit Shingles Russet-brown 65%. Deep-red 20% and Mountain-purple 15%

modern principle of harmony and contrast. duced in the accompanying illustrations. ples, shaded grays, also mixed tones blended on the these soft, non-fading colors and color blends are repro-Some of

office listed above. sent upon request. Address your inquiry to the nearest Descriptive folders of Watson products will be gladly



Watson Massive Hex Copper Green Tone



No. 424, Right Hip Flashing. No. 425, Left Hip Flashing.

No. 409, Ridge Flas

Watson Square-Tab



Watson Massive Hex Russet-brown

EDWARDS META L SPANISH

Made by THE EDWARDS MANUFACTURING CO

NEW YORK, N. Y. 515-565 Eggleston Ave., CINCINNATI, OHIO DALLAS, TEXAS

Edwards Metal Spanish Tile

A masterly example of the Metal Workers' Art, BEAUTY plus DURABILITY.

The Finest Roofing Product Obtainable

THE STATE OF

The beauty of the tile roof is undeniable, the old Moorislitile roofs of Spain lend a beauty and charm appreciated the world over. Edwards Metal Spanish Tile will give the same beauty, charm and dignity without the necessity of heavy roof construction, the danger of breakage and falling off or annoyance of constant attention. Suitable for the finest home or most humble dwelling, also for churches, schools and public buildings. Even garages, oil stations, etc., are made more attractive by its use.

The Advantages of Edwards Metal Spanish Tile

Extreme Beauty, Low Cost, Long Life, Storm Proof, Fire Proof, Ease of Application—any one can lay it.



Finishes

Copper Bearing Steel—Galvanized
Terne Tin Plate—Painted red or green
(Copper bearing steel base)
Laying size of all tiles: 834"x1156"
142 Tiles per square (100 sq. ft.)

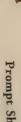
We Furnish Edwards Metal Spanish Tile In

Sheet Zinc Pure Copper

Edwards Metal Spanish tiles add the needed touch to this handsome residence, the home of Architect John M. Peterman, Fort Lauderdale, Florida.





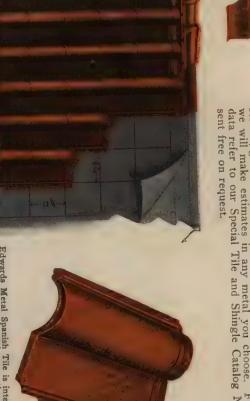


The copper and zinc tiles are furnished unpainted. The galvanized tile is furnished unpainted, but can be had painted red or green on special order at slight extra cost. Tin tiles are regularly furnished painted red; green painting is extra. The finish of Edwards copper tiles acquires a beautiful green with weathering and time, making it a preferred material for important roofing jobs. Prompt Shipment

We are the leading manufacturers of sheet metal building material. Our immense production facilities and large stocks on hand at our branches assure shipment of orders within twenty-four hours.
Full instructions for applying accompany each shipment of

our tile.

The facilities of our Engineering Department are at your service, gratis. Send us sketch of roof you have to cover and we will make estimates in any metal you choose. For full data refer to our Special Tile and Shingle Catalog No. 72, sent free on request.



Roof section, Edwards Metal Spanish Tile, Felt or paper is applied to boards. Roof is then lined hor zontally and vertically spaced to tile size. For units used, see Nos. 367, 790, 795, 793, 369, 424-5, 409. Edwards Metal Spanish Tile is interlocking, providing expansion and contraction, weather tight, repairproof. Easy to transport to job, handle and lay.

Tile illustrated is No. 367.

The distinctive and charming hexagon design adds to

FORD ROOFING PRODUCTS

Made by FORD ROOFING PRODUCTS CO.

Established 1865

529 South Franklin Street, CHICAGO, ILL.

in 1 Strip Shingles, Hexagon Shingles, Individual (STANDARD, JUNIOR AND GIANT), FORD VELVETONE SHINGLES, 3 in 1 GIANT STRIP AND GIANT INDIVIDUAL, FORD 4 FORD CYCLONE SAFETY SHINGLES

OTHER PRODUCTS: Asphalt Roll Roofings (Smooth SHINGLES (STANDARD AND GIANT).

and Slate surfaced)

Cyclone Safety Shingles

The Cyclone Safety Shingle It represents the most rials and construction to produce a shingle that actually recent development in mate is the last word in roof covweather and time. ering.

only assures positive protection of the home and its occu-This rugged shingle not

distinctive note with its charming colors Cyclone Safety Shingles have become and hexagonal design. SHINGLES

ing and blowing up found in ordinary types of shingles sive locking feature of the three thicknesses over more Cyclone, roof is water-tight are eliminated by the excluly seven inches provides a double and triple covering over the entire roof with than 50% of it. No wonder a "Cyclone." Headlap of nearand storm-proof.

pants from wind and weather, but adds a

No CUPPING, CURLING OR BLOWING WHEN CYCLONE the choice of builders, contractors and home owners all over the country who insist on roof SHINGLES ARE USED--The old faults of cupping, curlbeauty and positive protection at moderate cost.

roughly saturated with the finest Cyclone Safety Shingles. Long, heavy, tough-fibred fest thorappear asphalt forms the base of



roofed with Cyclone Safety Shingles." "A community of English type home

Cyclone, the Safety Shingle

"Cyclone" can truly be of the necessary elements to secure this protection functions of a roof. In performing its job the called the Safety Shingle, because it provides more than most types of roof To provide Safety and Protection from the elements are the primary coverings.

of the shingle itself but it also mars the beauty of the from exposure. When cuptively prevent curling or cupping of the shingle ping, curling or blowing up occurs, it not only detracts from the efficiency Double locked tabs posiblowing up in a severe wind or driving rain, or

Cyclone Safety Shingles have the character of roof lines

A long headlap of nearly seven inches eliminates any possibility of rain or snow reaching the roof boards.

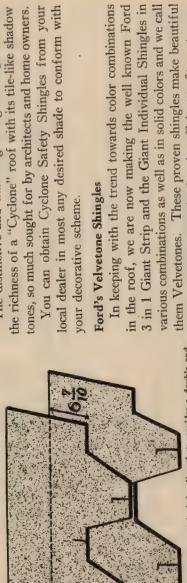
Extra Endurance is Built into Cyclone Shingles

Long heavy tough fibred felt, thoroughly saturated with the finest of asphalt, forms the base of Cyclone Safety Shingle.

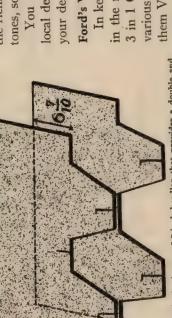
Coated with specially prepared asphalt and covered with slate and stone granules in nature's own colors provides a fire and time resisting covering. Double and triple thickness all over the roof adds an extra measure of endurance.

Cyclone Shingles Enhance Roof Beauty

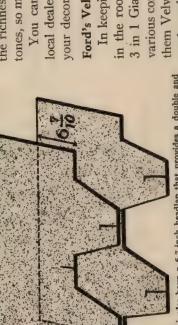
Architects, builders and home owners agree that a beautiful home must have a roof that will blend with its environment. The velvety tints and entrancing blends of Cyclone Safety Shingles await your selection, to enhance the beauty of your home.



Cyclone Safety Shingles have a 6.7-inch headlap that triple covering over entire roof



roofs, and the range of colors is sufficient to fit most every plan of exterior decoration and architecture.



Ford's Velvetone Shingles are now available in the following combinations:

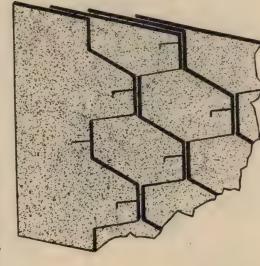
Opal Tone Combination Velvetone 3 in 1 Strip Blue-Brown Tone Blue-Green Tone Combination Combination Shingles-

Velvetone Giant Individual Blue-Green Tone Combination Shingles

Green-Opal Tone Blue-Brown Tone Blue-Opal Tone Combination Combination Combination

Shingles may be had in Solid colors for both types of Ford's Velvetone Delft Blue, Chocolate Brown and Golden Brown. Jade Green,

See your local lumber dealer for prices and samples.



ign builds up. How the pleasing octagon de

NATIONAL BUILDERS CATALOG

Continued on next page

MPERIAL SHALE ROOFING

Made by LUDOWICI-CELADON COMPANY

GENERAL OFFICES: 104 S. Michigan Ave., CHICAGO, ILL.

FACTORIES: NEW LEXINGTON, OHIO; PERU, KANSAS; COFFEYVILLE, KANSAS

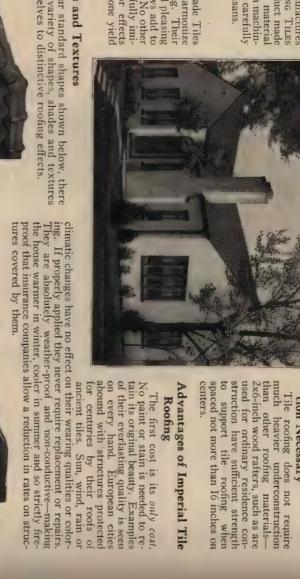
SALES OFFICES
NEW YORK, N. Y., 565 Fifth Ave.
WASHINGTON, D. C., 738 Fifteenth St., N.W.
PHILADELPHA, PA., 1315 Walnut St.
PITTSBURGH, PA., 355 Fifth Ave.

SALES OFFICE
CLEVELAND, OHIO, 1836 Euclid Ave.
CINCINNATI, OHIO, 622 Broadway
ST. LOUIS, Mo., 317 N. Eleventh St.
KANSAS CITY, Mo., 1004 Baltimore Ave.

This company manufactures IMPERIAL SHALE ROOFING TILES—a very high grade product made from the best of raw material and with the most modern machinery, every detail being carefully supervised by skilled artisans.

Attractiveness

A roof of Imperial Shade Tiles can be constructed to harmonize with any type of dwelling. Their rich, warm colorings and pleasing play of lights and shadows add to the beauty of any home. No other type of roofing can truthfully imitate the variegated color effects that hard-burned tiles alone yield permanentry



Many Shapes, Shades and Textures

In addition to the four standard shapes shown below, there is an almost unlimited variety of shapes, shades and textures that readily lend themselves to distinctive roofing effects.



Imperial Spanish Tiles—Are particularly adapted to those styles of architecture that add so much to the picturesqueness of Southern Europe, from the massive buildings of classical form to the small bungalows where romantic or unusual effects are sought. Tiles are formed with a lip-and-lap lock that provides positive protection from the weather. Length 13/4 inches; width 9/4 inches; average exposure 8/4x10/4 inches; average pieces per square 171; actual weight per square 950 pounds; shipping weight per square, with fittings, 1050 pounds.



Imperial Closed Shingle Tiles—A pattern widely used to carry out the idea of Colonial or Early English architecture. Has a tongue-and-groove lock and is far superior in actual strength to the ordinary flat shingle. In depth of reveal it accentuates the horizontal line, avoiding the monotonous effect of other flat roofing material. Length 11 inches; width, 834 inches; average exposure 8x8 inches; average pieces per square 225; actual weight per square 900 pounds; shipping weight per square, with fittings, 1000 pounds.

NATIONAL BUILDERS CATALOG



Advantages of Imperial Tile

used for ordinary residence con-struction have sufficient strength to support tile roofing when spaced not more than 16 inches on

2x6-inch wood rafters, such as are Tile roofing does not require much heavier underconstruction



for use where a rough and polychromatic effect is desired. Obtainable in an almost unlimited range of colors and shades, it is possible to tone a roof to harmonize ideally with the building it covers and the surroundings. Can be laid either random or regular exposure. Average exposure in length 11¼ inches; width, center to center of covers, 11½ inches: average pieces per square 224; actual weight per square 1200 pounds; shipping weight per square, with fittings, 1300 pounds.



Imperial French Tiles—An "all-around" tile that may be used with almost any type of house. Has a tongue-and-groove lock. While the general effect is flat, the convolutions in the surface afford considerable play of light and shadow. Length 16¼ inches; width 9 inches; average exposure 8½x13¾ inches; average pieces per square 133; actual weight per square 925 pounds; shipping weight per square with httings, 1025 pounds

BUILDING PAPER AND DECK CLOT

Made by SAFEPACK MILLS

OFFICES

THE RUBEROID CO. Division of

BOSTON (MILLIS) MASS.,

ERIE, PA.,

BALTIMORE, MD.,

MOBILE, ALA.

Products

NEW YORK, N. Y.,

CHICAGO, ILL.,

No Heavier Underconstruc-

tion Necessary

COVERING—"Safedex." Sheath," and "Kraftex." Building Papers-"Safe-n-dry," "7-Ply," "Triple-CANVAS PORCH and DECK

OTHER PRODUCTS: Standard and Massive Asphalt Shingles, Unit and Strip, Smooth and Mineral Surfaced Roll Roofing, Roof Coatings and Cements.

Safe-n-dry Building Paper

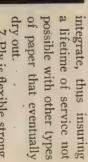
architects, engineers and contractors because of its un-This reenforced building paper permanently water-proofs as it insulates. It is consistently recommended by usual strength, protective and insulating qualities.

tight. Rolls 36 inches wide, containing 500 and 250 square ing and creaking. Clean, odorless, waterproof and airand brick veneer as well as under floors to prevent warpbrittle in winter. Used under clapboards, shingles, stucco impossible to tear. Never becomes sticky in summer or extra reinforcing cords at each edge, Safe-n-dry is almost Because of the strong-woven jute fabric used and

eliminates the costly labor of hauling and spreading sand obtainable in 40, 48, 54 and 60 inch widths. Completely and sawdust. Paper may be used over and over again For curing and covering concrete floors, Safe-n-dry is

7-Ply Building Paper

ailel and diagonal). The center or inner sheet is asphalt asphalt and two separate plies of reenforcing cords (parstrong kraft paper, two separate layers of waterproof coated on both sides. As a result 7-Ply can never dis-This building paper consists of three separate sheets of



as under floors. and brick veneer, as tough, waterproof. boards, shingles, stucco by builders under clapweatherproof. It is used 7-Ply is flexible, strong,



Rolls 36 in. wide contain 500 sq. ft. Half rolls contain 250 sq. ft. To order 40, 48, 54 and 60 in. wide.

Safedex Canvas Porch and Deck Covering

slightly sloping porch roofs and porch floors. Safedex is the ideal roofing material for all flat or

grade of Safekote Roll Roofing, cemented together with waterproof asphalt, making a roofing or floor covering of exceptionally high protective value. It consists of a fine quality canvas and a standard

canvas side up and nailed Safedex is pliable, tough and long wearing. It is laid

not bulge or creep, and excepting at laps. It will in place without cement, other material. dinary canvas, protective value than orcovering of far greater color it forms a practical when painted any desired tin

wide, containing 108 sq. Put up in rolls 36 in

AR CLOSET LINING BROWN'S SUPERCEI

Manufactured by GEORGE C. BROWN & CO.

MEMPHIS,

Aromatic Red Cedar in the World Largest Manufacturers of Tennessee

BROWN'S SUPERCEDAR CLOSET LINING.

General Information

Supercedar is the trade marked name of the closet lining made by George C. Brown & Co., Memphis, Tenn., world's largest producer of Aromatic red cedar. It is a superior product, 90 per cent or more red heart, scientifically cured, and rigidly inspected during manufacture. It is tongue-and-grooved, end matched, and sealed immediately in double face fibre board cartons against deterioration or damage in shipping.

LINING UPER BROI CLOSET REG. U.S.

None genuine without this Trade Mark on each package.

Deadly to Moths

The Aroma of Supercedar, so pleasant to humans, is deadly to moths. A closet properly lined with Supercedar and having a well fitting door, will suffocate the moth or its larvae. The aroma comes from the oil in the wood, but the oil is only found in the red heartwood, that is the reason why Brown's Supercedar is more desirable than ordinary cedar ree; it is 90 per cent or more red heart. Tennessee Aromatic Red Cedar trees, logs or lumber contain much sap, or what is known as white wood. The white wood has no value as a moth deterrent. It contains no oil and gives off no aroma.

Lining can be laid as a new floor. The cost will be reasonable. Bearin mindthat the aroma of Supercedar stifies the moth. For that reason the closet door should be

a good, solid floor, the 38" Supercedar Closet

Cost

Supercedar with its superiorities and many advantages, costs no more than ordinary cedar closet lining.

The method of packing reduces the final cost of Brown's Supercedar Closet Lining by protecting contents against loss or damage in shipping or while in dealer's warehouse.

weather-stripped unless it is an extra snug-fitting door. The inside of the door should be lined with Supercedar Closet Lining and floor covered with 15 Supercedar Flooring. The lining in its natural state is effective; if varnished or painted it cannot give off the aroma. Clothing and other articles should be aired and cleaned before storing. All members of the family should be warned to keep the closet door closed.

Installation Information

In New Homes, closets are first plastered or lined with wallboard. Lining may be nailed direct to studding in closet wall, ceiling and inside of door, providing closet is first lined with heavy building paper and all openings below floor or above ceiling of room are closed. Use \$\psi_0^{\beta}\$ supercedar Flooring. Do not varnish or paint Supercedar. The end joints need not come over the studding, because end matching insurestight joints. Use of Supercedar Quarter Round insures tight corners and a finished appearance.

Remodeling Work

Homes and apartments withoutmoth-proof closets can be modernized quick-ly, easily and cheaply with Supercedar. Simply apply Supercedar over the plaster walls and ceiling. Line

Brown's Supercedar Closet Lining is 34" thick.
Packages sealed at George C. Brown & Company's
mills contain following quantities: Package of 11,2" face,
64 ft.; 2" face, 60 ft., 2½" face, 44 ft.; 2½" face, 48 ft.;
3" face, 60 ft.; 3¾" face, 64 ft.; 3½" face, 34 ft.; 4" face,
38 ft.; 4¼" face, 40 ft.
Sizes and contents plainly marked on each carton. Registered trade mark "SUPERCEDAR" and Brown's guarantee will also be found on each package of the genuine.

Chantity Required

Quantity Required

Supercedar is measured same as Oak flooring. To arrive at the required amount, add to the square feet of the surface to be covered the following percentages: If 1½ face, add 33½ %; if 2½ face, add 25%; if 2½ face, add 25%; if 2½ face, add 20%; if 3½ face, add 20%; if 4½ face, add 17%.

Supercedar Quarter Round—Used in all corners adds a finished appearance to the closet and helps make it tight and more efficient. Can be secured in boxes of 200 lineal feet each.

Supercedar Shelving, which is produced from solid Red Heartwood Cedar, can be secured in 8 ft. lengths. Standard widths are 8, 9, 10° and 11°. Wider shelves can be

Closet. This shelving, which is produced from solid Red Heartwood Cedar, can be secured in 8 ft. lengths. Standard widths are 8", 9", 10" and 11". Wider shelves can be made by using double widths.

Build a Supercedar Storage Closet in the Attic—We will furnish, without charge, blue print and list of materials to build convenient storage closets. Sizes 4' x 4' x 7' or 3½" x 6' x 8'.

Guarantee on Package

Lining is manufactured exclusively from Juniper Virginiana, the arorn States, famous for its pleasing, fragrant aroma and used more than h-Proof Cedar Chests. Brown's Supercedar Closet Lin matic Red Cedar of the Southern fifty years in the making of Moth-I

Insist on Supercedar

Supercedar Closet Lining makes certain that all the aroma so deadly

The process of manufacture of Brown's Supercedar Closet Lining makes certain that all the aroma so deadly to moths is retained in the finished product.

Houses and apartments with Supercedar Closets have greater appeal to both buyer and renter.

Lumber dealers and builders, supply houses in nearly every community in the United States have Supercedar in stock or can get it quickly from warehouse stocks located in various sections of the country.

'CELLized

147

Wood Blocks-Planks-Strip Flooring Manufactured by E. L. BRUCE COMPANY

MEMPHIS, TENN.

LAUREL, MISS. LITTLE ROCK, ARK. CAIRO, ILL.

MEMPHIS, TENN. NASHVILLE, TENN.

PRESCOTT, ARK. BRUCE, MISS.

REED CITY, MICH. OAK GROVE, LA.

Bruce Solid Oak Floor Planks *CELLized (or untreated)

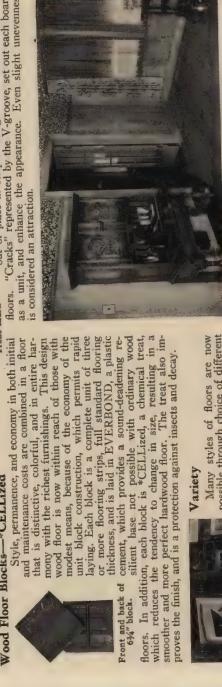
Beveled or Square Edge

This historical type meets the demand for an unusual and distinctive floor treatment. Its heritage is from all countries when wooden flooring, before the era of modern machinery, had to be cut roughly out of the log. Knots and other grade "defects" that are out of place in strip flooring are looked for in plank floors. "Cracks" represented by the V-groove, set out each board as a unit, and enhance the appearance. Even slight unevenness is considered an attraction.

Bruce products may be obtained through responsible lumber dealers everywhere. For further information, write E. L. Bruce Co., Memphis, Tenn.

Wood Floor Blocks-*CELLized

*CELLIZED WOOD FLOOR BLOCKS — SOLID OAK FLOOR PLANKS — OAK AND MAPLE STRIP FLOORING.



There is a choice of 5 widths, 4", 5", 6", 7" and 8" which may be laid either in equal or random widths the full length of the room, or in random widths and random lengths. The illustration shows planks for walls also, a very rich and harmonious treatment of the wall in connection with the plank floor.

Variety

Bruce Strip Oak Flooring

The finished beauty of the more commonly used narrow face oak flooring is enhanced by *CELLizing, as the treat tends to harmonize the natural contrasts in the grain of oak. All the advantages of *CELLizing apply to narrow face flooring, as well as to oak blocks and oak floor planks. *CELLized (or untreated) Many styles of floors are now possible through choice of different woods, oak, walnut, light and dark Philippine mahogany, beech and maple, used singly or in combination, either beveled or square edge. The sizes of squares range from 634" to 13" and there is also available for basket-weave, herringbone and other patterns, rectangle blocks in two sizes, 6" x 12" and 634" x 1372". A new and strikingly beautiful use for blocks is for walls and citiful use for blocks is for walls and citiful use for blocks are practical for all types of structures as well as homes, such as hotels, offices, hospitals, apartments and public

Ceda'line

churches, clubs,

Laid by Specialists

Genuine Tennessee aromatic red cedar, tongued and grooved, and side-matched, is unexcelled for use in lining clothes closets. Ceda'line is manufactured exclusively by E. L. BRUCE COMPANY and may be obtained through your local lumber dealer. In several width strips, 3/8" thick; also applied over plaster in old homes. Use no finish as varnish destroys the aromatic qualticidar.

The distribution of Bruce *CELLized blocks is handled by *CELLized Oak Flooring, Inc., Memphis, Tenn., who will furnish complete information. They are laid only by licensed contractors, authorized by *CELLized Oak Flooring, Inc. Names will be

rnished on

Literature

(1) "Style in Oak Floors," illustrating block, plank and strip oak flooring, *CELLized. (2) Plank Floors—as Crafted by Bruce. (3) "Just Inside Your Threshold"—oak flooring untreated and Ceda'line. (4) Leaflets, descriptive of *CELLized floor products, individually. (5) "Bruce Every Month," a house organ replete with information invaluable to every user of wood flooring products.

Write E. L. Bruce Company, Memphis, Tenn., Largest Manu-facturers of Hardwood Flooring in the World.

The strong color contrasts in this floor are available in "lower" grade blocks only,

NATIONAL BUILDERS CATALOG

WHITE PINE

WINDOW FRAMES

WHITE PINE WINDOW FRAMES

Manufactured by ANDERSEN FRAME CORPORATION

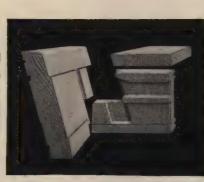
BAYPORT, MINNESOTA

Products

casement windows, and outside door frames for buildings of frame, stucco, brick veneer, and masonry Pine for basement, double-hung and casement windows, and outside Standard Frames of genuine White MASTER FRAMES

a product of The Andersen Master Frame sen Master Frame is twenty-five years of

specialization in the manufacture of window and door frames. Standardization and large quantity production make possible the highest quality in materials and workmanship at a cost comparable to the cost of ordinary stock frames.



The Locked Sill-Joint

The new Andersen Master Frames are made entirely of Genuine White Pine. This wood has proven its endurance for centuries in the nation's oldest colonial homes. This is the wood that will not warp, swell, shrink or crack. It takes nails and holds paint better than any other known wood.

Plant Efficiency

frames or delays in shipping can occur because of inclement weather. Warehouse facilities for the storing of 135,000 bundled frames and 150,000 additional frames in loose parts assure adequate and prompt service. frames, neatly bundled, reach the shipping warehouse. Outgoing cars are loaded inside the warehouse so that no injury to the

The plant is equipped with the most modern machinery, designed to do the highest class of smooth and accurate milling. Every operation is performed by machinery. Many machines have been specially built and have been patented, and many machine the machine specially built and have been patented, and many machine

Pockets are cut, broken out and refastened with screws, pulleys

NATIONAL BUILDERS CATALOG

acrepa

MASTER FRAMES with the Locked Sill-Joint

have been distinguished by many outstanding features which are found in no other standardized or stock frame. In the new Andersen Master Frames recently perfected, the best of these features have been retained and many additional exclusive features Designed to fulfill every demand and use, Andersen Frames



Genuine White Pine

As far as practical, all frame parts are assembled at the factory

The factory, which is all on one floor, is so arranged that the rough dry lumber is unloaded under cover and stays under cover during the entire process of manufacture. The operations advance systematically and continuously forward until the finished

chine units are provided with special devices (patented or patents pending) which enable them to do several operations with one

are screwed in place; parting beads and blind-stops are nailed in posi-

Workmanship

are trained and experienced in this specialized production. Labor turnover is practically negligible, due to The highly skilled mill operatives

the excellent working conditions.

Complete supervision and inspection is rigidly maintained by trained inspectors, foremen and superintendents.

By-Products Eliminate Waste

tings are utilized. An economical grade of rough lumber (Nos. 1, 2 and 3 Shop, Factory Grades) is purchased for raw stock. How, then, is the finished product of virtually clear stock? *There is little waste*. All knots and defects are cut out of the raw stock in the manual. acturing process in such a way that even the shortest clear cut-

and stock for veneered door cores, pine sash, toys, shade rollers, shade slats and silk spindles. The shavings are baled and sold to other industries. Even the knots and defective pieces are sold the frames. A ready market is waiting to absorb everything not used in a frames. Small cuttings are converted into screen mouldings

is why a frame of such excellent material can be sold at such That is why the Andersen Frame is a clear frame.

A Frame Up in Ten Minutes

All parts fit exactly. No trimming or refitting is necessary on the job. Each frame is shipped knocked down in two bundles. Dealers furnish Andersen Master Frames either assembled or K. D. in bundles. One man with a hammer and a few nails can completely erect an Andersen Master Frame in ten minutes or

Outstanding Features

fort because of its seven new and exclusive weather-tight 1. The Tongue Between Head and Side Casing-This makes The new Andersen Master Frame provides for home com-

a tight, even joint and prevents any chance of leakage at this point.

2. Locked Sill-Joint Construction—Holds sill and jamb rigid so they cannot pull apart when weight is applied to sill. Prevents leakage at this point. (Patented.)

3. Sill Has Three Inch Slope to the Foot—50% more slope than any other stock frame. Many architects have adopted

this sill slope as ideal for perfect drainage.

4. Chamtered Bunu-Swy-Assistance (Patented.)
prevents dirt lodging behind the blind stop. (Patented.)
5. Inside Liner—This makes the jamb much stronger and
5. Inside Liner—Historical for inside trim. This feature 4. Chamfered Blind-stop-Allows perfect sill drainage and

provides a greater nailing surface for inside trim. This feature also permits adjustment of the jamb width for wall board or Dase without ripping. (Patent

pending.) **6.** 33/4 ance of the house and are recommended by 33/4 inch Casings-Add to the appear-

nished in a stock frame. This feature is addition to the noiseless, wearproof a architects for interior and exterior trim vantages machine turned wheel has ever is the first time a sash pulley with a nine turned wheel has ever been fur-Cast Iron Pulley with Turned Wheelof the Andersen patented pulley.



Residence—Grace Field, Great Neck, Long Island. Architect—Henry T. Aspinwall. Builder—T. M. Lay, Inc.

Home Comfort

Absolute accurate construction; patented features to allow easy and economical use of the wide blind stop; patented noiseless, easy running pulleys all help to make Andersen Master Frames nsure home comfort.

Beauty

Carefully proportioned, easily adapted to any designer's wishes—casings of Genuine White Pine to take paint smoothly—these qualities of Andersen Master Frames insure building beauty.

Andersen Master Frames, handled nationally by leading jobbers and lumber dealers, are so distributed as to be available to builders Convenience

Standardized and specialized manufacture, quantity buying and production make it possible to market Andersen Master Frames at a reasonable price, and, through them, to insure both contractor and home owner real economy. Swastika Hotel, Raton, New Mexico. Architect-Geo. Williamson, Albuquerque, New Mexico. Economy Inc.,

Available Through Dealers

Andersen Master Frames are available at lumber and mill-work dealers. Write for the name of your nearest Andersen dealer. Complete architectural and construction details will be sent to contractors and architects upon request.

that help builders gain a reputation for good construction Special Features of Andersen Master Frames

 Rabbet and drip groove in water drip prevent water leakage.
 Closed joint between head and side casing for more weather-tight construction. (18) (19) (17) Front edge of sill is rounded to prevent slivering and dent Water drip groove under sill.
Three-inch slope to sill insures better

(3) Inside liner provides more space for nailing inside trim.

Permits variation of jamb width for wallboard or plaster

(20)

to receive stock stool.

Jamb lugs below sill (resting

on header) give permanent sup-port. No trimming or block-

Casement Frame

for Frame

Construction

O P

drainage.

Designed

(4) Patented groove to receive (5) piece of stock matched lumber forming a wide blind stop; in mullion, this groove receives a (6) double-tongued filler piece furnished for continuous blind stop; in inside liner, it receives (7) an inside ground casing.

This groove also makes it possible to convert this standard frame to a brick veneer or magnetic to the standard frame to a bric base without ripping. sonry box frame.

(21)

port. No trimming or blocking necessary.

Rabbet to receive (22) an inside ground casing to prevent air leakage.

Frame Construction Window Frame for Double Hung

Jamb is tongued into blind stop to prevent air and water leak-

HO (II) OF

(8)

(I

4

(9) Sill

ends

smooth cut.

HEAD

(10) Extension of sill backs up joint between sill and side casing.
(11) Extension of head jamb supports wide blind stops.
(12) Jamb and sill dadoed to make locked sill-joint. Mullion jambs also are dadoed for locked sill-joint and are dadoed into continuous head jamb. are trimmed and

JAMB (E

(2)

vent water leakage.

(15) Chamfered blind stop insures better sill drainage.

(16) Shoulders on sill prevent air and water leakage under lower sash and storm sash. Note high front shoulder on sill which, on sill extension (10) backs up joint between sill and side casing. Locked sill-joint insures rigid and leak-proof construction. Groove for parting stop is shal-lower than dado for sill to pre-(27) The head jamb at (23) the outer sash rabbet is 15/16" thicker than at (24), the inner sash rabbet, thus equalizing the normal difference in height at (25) due to the sill slope.

The sill filler stop (26) is inserted when frames are to be tom rail and a level surface back of the sash for outswingforming a shoulder for the bot-

ing casement hardware.

Perpendicular groove in side rabbets prevents water being driven around sides of inswinging sash.

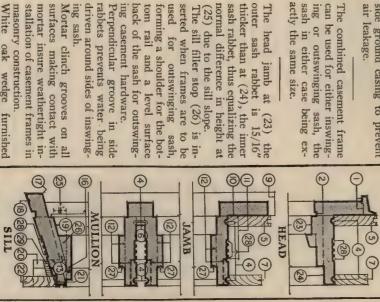
Mortar clinch grooves on all surfaces making contact with

MULLION

(14)(13)

(28) White oak wedge mortar insure weathertight in-stallation of casement frames in

(29) frame to lock sill in place. furnished



NATIONAL BUILDERS CATALOG

©

Continued on next page

OODWORK

TES SERVICE BUREAU THE CURTIS COMPAN

390 Curtis Building, CLINTON, IOWA CURTIS DOOR & SASH CO., Chicago, III. CURTIS-YALE-PURVIS CO.

CURTIS SASH & DOOR CO., Sioux City, Iowa CURTIS, TOWLE & PAINE CO., Lincoln, Neb. CURTIS, TOWLE & PAINE CO., Topeka, Kan. Curtis Companies, Inc., Clinton, Iowa

CURTIS BROS. & CO., Clinton, Iowa CURTIS & YALE CO., Wausau, Wis.

Manufacturers of Trademarked Architectural Interior and Exterior Woodwork, Standardized SALES OFFICES AND DISPLAY ROOMS, Curtis Woodwork, Inc., Room 201, 9 East 41st St., New York, N. Y. CHICAGO DISPLAY ROOMS, Curtis Door & Sash Co., 1414 So. Western Ave., Chicago, Ill.

For Curtis Sectional Kitchen Units see page 191

Products

Frames Mantels Stairways Stair Material Porch Work Architectural Woodwork (Standardized) Interior Doors
Panel Work
Dining Alcoves
Windows and Sash
Exterior Moldings
Interior Trim Complete Entrances Exterior Doors

Sectional Kitchen Units (See page 191) Dining Alcoves Medicine Cabinets Built-in Woodwork

China Closets
China Closets
Dressing Tables and Cases
Linen and Tray Cases
Ironing Boards Bookcase Materials

Design

turally and structurally a interior decorative must begin with the woodwork-which is architecpart of the house itself. and strikes the keynote of in: Beauty scheme.

designed some of the most beautiful and costly houses The designs were tis by architects who have architect and interior dec-Curtis Woodwork designs conform to the most rigid requirements of the created especially for Curorator.

French Doors C-3212. Unusual and popular are these French doors, with the tops arched in a perfect half circle, Made in pine in sizes ranging from 440" to 5'0"x7'0". No hardware included. work, whose and America

authorities say, is "worthy to stand with the best work of all time." Some Curtis tions of woodwork forms taken designs are authentic reproducfrom some of the finest old homes in America and England
—houses with historic back--houses with historic grounds.

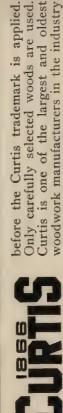
There are Curtis designs appropriate for any style and size home you build.

Construction

RABBET | IN CHECK RAIL.

methods and workmanship. Each piece of Curtis Wood-work is inspected at the factory, These authentic woodwork according to very rigid specifias regards materials, designs are produced by Curtis cations Interior Door C-3020, A copular Colonial design which is used in houses of II types. The Curtis Carago shows dozens of other

NATIONAL BUILDERS CATALOG



-dating back to 1866. This trademark appear tis Woodwork. It g choicest woods, high workmanship and auth

construction, have added nothing to the cost of Curtis Woodwork. When such expense items as cutting and fitting and sanding on the job are taken into account Curtis Woodwork often costs less than other You can have Curtis Woodwork in your new or remodeled home at a final cost that will be no millwork. Authentic design, superior materials and kinds. Low cost has been made possible by large more-maybe less-than you will pay for ordinary scale production and wide distribution.

Deliveries

Mountains. The Curtis dealer nearest you will be glad to give you full information about the items he carries in stock and to show you his Curtis Catarepresentative stock and maintain beautiful displays. The wide territory covered by the several Curtis insti-In almost every locality the leading wood work dealer handles the Curtis line. Many dealers carry a tutions insures prompt and inexpensive delivery every-where east of the Rocky Mountains. The Curtis designs, of which most shown here are merely exy, which offers you a mplete selection of Curtis signs, of which those

is no Curtis amples,

dealer in your community, a letter to the Curtis Com-

Curtis Entrance Edward. Door C-1070, frame C-1762. This entrance is especially appropriate for the house of Tudor or Spanish type. See other Curtis entrances and doors at the Curtis dealers, who will give you prices and full information on the entire line.

panies Service Bureau, Clinton, Iowa, describing your requirements, will bring litera-ture and complete information.

Curtis Rabbeted Window. See Curtis Check-Rail—The draw Catalog at dealers tion through the check-tion through the check-windows, rails on a Curtis double offset or "rabbet" in the beveled join between these rails. Seven times as much wind pressure is required to get through this kind of a joint as an ordinary beveled check-rail. Window C-2714.
Circle top casement
Window. See Curtis
Catalog at dealers
for full selection of
windows.

Window C-2512.
Curtis Woodwork includes windows of all types in all necessary sizes. This is a popular design.

TRIMPAK

Highest Grade Interior Trim for Doors and Windows

Manufactured by TRIMPAK CORPORATION

44 Whitehall Street, NEW YORK, N. Y.

19 South La Salle Street, CHICAGO, ILL. time an order is being filled. It is impossible to keep an evenly balanced stock of long trim-difficult to keep a correct inventory. Each carton of TrimPak is plainly labeled with name of wood and size of window or

Product

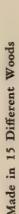
to minimize waste and to guarantee delivery in perfect condition. Trimgrade, cut to approximate lengths at the mill to insure perfect quality, Pak is made on special machinery in doors and windows of the highest finish interior .2 **TrimPak** grade, cut

eight famous lumber manufacturing plants in all the species and patterns desired by good builders in the various sections of the country. The necessary trim various sections of the country. The necessary trim for each door or window is shipped in two sealed cartons, one containing the vertical parts and the other the horizontal parts. TrimPak is sold through retail lumber dealers throughout the United States.

to the following the partial parts. When filling an order for any kind of door or window trim it is only necessary to take two cartons from stock, a long carton containing the vertical parts and a short carton containing the horizontal parts.

NTERIOR FINISH

Highest Grade



Louisiana Red Cypress Medium Texture Poplar Short Leaf Yellow Pine Philippine Mahogany Arkansas Soft Pine Soft Yellow Poplar Pondosa Pine

Super-Tupelo Douglas Fir Oak

Red Gum Sap Gum Basswood Red Gum Chestnut Aspen



Order from Your Lumber Dealer

Builders desiring to use the modern TrimPak from their local lumber dealers. Every lumber dealer in the United States can readily obtain TrimPak in interior trim may order directly the woods and patterns used in his community. applying method of

Builders desiring to obtain trim completely finished may purchase standard styles of TrimPak already mitred with steel spline, or with wood spline for gluing. Also with the stools and aprons returned. may purchase standard styles of TrimPak



method of handling trim the carpenters spent a large percentage of their time looking for different pieces to fit the particular openings they were trimming, matching stock and sanding. Many times when the job was

assembled for quick erection. Our careful inspection insures delivery to you without defect. Under the old

soned wood, already cut to approximate length and

You get trim of the highest grade in perfectly sea-

Advantages to Building Contractors

As Package Is Shipped from Mills

Samples and Infor-Literature, mation

items, which meant material wasted or time lost waiting for additional stock. With TrimPak only half the

saw cuts formerly made are required.

finished they were over or short on some or all the

Complete samples will be mailed to any builder or archi-tect making the request on his own letter-head.

every piece

You handle trim in standard packages-

Advantages to the Lumber Dealer

Further information may be obtained from the TrimPak Corporation by addressing our nearest office.

perfect and cut to approximate length by accurate, automatic machinery—instead of receiving mixed carloads of random lengths which must be sorted, stored, and got out of stock by a slow, laborious process every

CELOTEX INSULATING CANE BOARD

Made by THE CELOTEX COMPANY

919 North Michigan Ave., CHICAGO, ILLINOIS Sales distributors throughout the World

BOARD for WALL and ROOF SHEATH-CELOTEX STANDARD BUILDING

For Celotex Lath as Plaster Base,

For Celotex Insulating Cane Board, see pages 154-157.

as sheathing under wood siding, shingles, stucco, brick square foot, per degree F., per inch thickness. It is used or stone veneer. It adds insulation as you build your boards 4 ft. wide, 7 to 12 ft. long, 7/16 and 7/8 in. thick. winter and saves fuel money. It is an insulating sheathing. home, holds out summer heat, keeps the house warm in It has a thermal conductivity of 0.33 B.t.u. per hour, per Celotex Standard Building Board comes in big, strong

construction spaced 16" o.c. 2" x 4" headers shall be cut in between framing as a nailing base for all horizontal Celotex joints. Framing-Studs shall be framed as in ordinary



Celotex Builds Stronger

The test shows why Celotex builds stronger walls. Two frames are built exactly alike, except that one is sheathed with Celotex, the other with wood sheathing. Under strain from the turnbuckle the Celotex frame always pulls the wood sheathed frame out of shape. This is because broad, strong boards of Celotex afford greater diagonal bracing to the walls.

spacing nails 6 inches apart, then around all edges standard galvanized roofing nails, with 3/8 inch heads, starting at top, nailing to intermediate studs first inch joint between all boards. with ample bearing for directly to and running lengthwise with the framing spacing nails 3 inches apart, driving the nails home. Bring boards in close contact with all window and Application of Celotex-Apply all Celotex boards nailing all edges. Leave 3/16 Nail with 11/2 inch

Send for the Celotex Specification Book

NATIONAL BUILDERS CATALOG

CELOTEX **Exterior Finish**

Celotex nailing through to studs. All siding joints shall be cut to butt Wood Siding-Apply directly over

INSULATING CANE BOARD

Shingles-Fur out with 1" x 2" furring strips nailed

horizontally over Celotex to studs spaced to fit shingles. Nail shingles to furring strips.

stapling through the Celotex into studs. bases shall be applied directly over Celotex, nailing or wire lath, expanded metal lath or other self furring stucco Stucco-1. Self Furring Base-Beveled wood lath,

through Celotex to the studs. ner. (c) Self furring nails or staples shall be driven crimped band iron shall be stapled through the Celotex in regular manner. (b) Metal furring, iron rods or to the stud. Wood, wire or metal lath applied to furring be nailed vertically over each stud through the Celotex to the studs. Metal or wire lath applied in regular man-2. Non Furring Bases-(a) Wood furring strips shall

and Brick or Stone. allowing not less than 1/2 inch space between Celotex to the studs, lay Brick or Stone in regular manner Brick or Stone Veneer-Nail ties through Celotex

to enter wood backing at least I" must be used. Note: In all cases nails or staples of sufficient length



Celotex Standard Building Board is easy to handle and goes up It is made in two thicknesses, %16" and %4".

UNITED STATE MINERAL MOOL

THE PERFECT INSULATOR AND SOUND DEADENER

Heat-Proof

Cold-Proof

Fire-Proof Manufactured by UNITED STATES MINERAL WOOL COMPANY Sound-Proof

280 MADISON AVE., NEW YORK Western Connection—Columbia Mineral Wool Company, South Milwaukee, Wisconsin FACTORY, STANHOPE, N. J.



Mineral Wool as applied walls, partitions, floors and roof.

Insulator and Sound Deadener. MINERAL WOOL-A non-combustible, indestructible

Characteristics of Mineral Wool

a fibrous state which creates a mass of very fine, inter-laced irregular fibres, and incidentally forms innumerable verting blast furnace slag while in a melted condition minute air cells. Mineral Wool is entirely mineral and is made by into

bulk of Mineral Wool and furnish the most effective resistance known to the transmission of heat or cold, as well as sound, fire and dampness. These air cells constitute from 92% to 96% of the

Use of Mineral Wool

standpoint of economy and comfort. The use of Mineral Wool for insulating any type of building cannot be too strongly emphasized from both the

makes the structure cooler in summer and warmer in winter. It shuts out the wind and dampness, deadens the By minimizing the transmission of heat and cold it

noise and forms an effective fire barrier.

The saving in fuel required for heating will pay the entire cost of the installation within a few years.

Mineral Wool used for interlining walls, roofs, floors and ceilings is unequaled as an insulator and sound

and disease germs. Neither rats, mice nor insects can make their way through Mineral Wool or live in it. terial produced which offers a like protection from vermin deadener. From a sanitary standpoint there is no insulating ma-

To find the quantity of Ordinary Mineral Wool re-

quired to fill the outside walls the full thickness of stud-

Rule—1 lb. per sq. ft. for each inch in thickness. horizontal line and multiply by the height of the studding, which will give the square feet of outside surface. Deduct, ordinarily, one-third to one-half for space occupied Take the entire distance around the building

Grades and Cost required to fill the space.

the result will be the number of pounds of Mineral Wool

by doors, windows, chimneys, studding, bracing, etc. Multiply the remainder by the thickness of the studding;

The Ordinary grade of Mineral Wool (the quality invariably used in building construction) weighs about 1 lb. per sq. ft., 1 in. thick, or 12 lbs. per cu. ft.

\$10.00 per ton will usually cover freight charges. A It costs \$32.00 (subject to change) per ton at factory. Within a radius of 200 miles from New York, N. Y., laborer can apply from ½ to ¾ of a ton a day.

How to Specify

"Insulation of Mineral Wool (United States Mineral Wool Company, 280 Madison Avenue, New York) shall be provided for For floors, it shall be (4 in.) thick and set upon boards placed between beams on cleats. For walls, it shall fill the spaces between study and be pactly but lightly. eaves to (collar beams). The Wool shall be pressed com-For roofs, it shall fill the space between rafters from placed in position as the lathing is being proceeded with

Samples

plied, on application Samples and descriptive pamphlets will be gladly sup-

- CELOTEX INSULATING CANE BOARD -

CELOTEX INSULATING CANE BOARD Made by THE CELOTEX COMPANY

919 North Michigan Ave., CHICAGO, ILL. Sales distributors throughout the World

For Celotex Standard Building CELOTEX INSULATING CANE BOARD. Board for Wall and Roof Sheathing, see page 152.

For Celotex Lath as Plaster Base, see page 162.

General Information

Science has discovered that the usual building materials, such as Wood, Brick, Stone, Concrete, Plaster, an avoidable heat loss of from 25% to 60% right through etc., when used alone, offer little resistance to the passage of heat and cold. Careful experiments show that there is the walls and roofs of homes built with the ordinary ma-

A special heat-stopping or insulating material is needed. Solid construction is not enough and much too costly. Now this protection is available for every home, old or

in summer, stronger and quieter. In buildings properly insulated with Celotex, smaller heating plants may be sulation effectively resisting the passage of both heat and Because Celotex replaces other materials in buildnothing extra. More than 250,000 buildings are insulated with Celotex, making them warmer in winter and cooler Celotex Insulating Cane Board means economical inings it is not an added item and therefore costs little or



Whenever you Buy a House Look for this Sign. of New Home Comfort.

Celotex Standard Building Board

7%" thick, weighing approximately 60 pounds to the 100 square feet. Sterilized and waterproofed in made from the long, tough fibres of cane into big, strong boards 7' to 12' long, 4' wide, and 7'16" and 1. As Sheathing for Wall or Roof-replacing wood Description-Celotex Standard Building Board is Tests show the thermal conductivity as being 0.33 B.t.u. per hour, per square foot, per degree F., per inch thickness. Principal uses process of manufacture.

See page 152. and paper.

See page As Interior Finish-plain or decorated.

As Roof and Attic Insulation-See page 155

NATIONAL BUILDERS CATALOG

INSULATING CANE BOARD

CELO

4. As Garage Insulation-Use for interior finish. See page 156.

Celotex Lath

Celotex Lath is a superior plaster plastering. It is the only lath made from the long, tough and become imbedded in the plaster, forming a secure and Celotex Lath is especially designed to einforce against plaster cracks and eliminate lath marks, hereby permanently protecting the beauty of plastered lispensable requirement for year round comfort in the surface for These fibres protrude from the surface valls and ceilings. Then, too, it gives insulation, the inbase plus insulation, presenting an ideal permanent bond. ibres of cane. ionne.

s delivered on the job in convenient bundles just as it is Celotex Lath is 18"x48" and 716" and 78" thick. backed at the mill.

Celotex for Sound Insulation

nomical material for insulating floor, walls and parti-Celotex and plaster partitions have seen found by test to be more opaque to sound than ordinary plastered partitions. There are many factors hat determine the effectiveness of partitions and floors n excluding the passage of sound from one room to anther. For more detailed information, including specificaions, details and tests on Celotex for sound insulation, Celotex Insulating Cane Board is a practical and ecowrite for Technical Note No. 10-Celotex for Sound ions against sound. nsulation.

Because of the high insulating value of Celotex Insulatng Cane Board, it is being recommended and specified by



Use Celotex Like This

Celotex should be built into both roof and walls. (1) As sheathing it replaces wood lumber, adds strength. (2) As plaster it is superior to wood lath, makes better looking walls. (3) For interior finish. (4) Attic insulation. (5) Roof sheathing under shingles. (6) In the garage.

leading Architects and Contractors for insulating roofs and attics. For insulating homes Celotex can be applied Any kind Celotex for insulating roofs and attics. For insulating any type of roof deck, under any type of roof covering, of roof covering may be used over Celotex. See Below, flat roofs of commercial and industrial buildings, over write for "Specifications and Details for Celotex Rool either under or over the roof rafters, or both. Insulation Board."

Note: For complete information write to The Celotex Company.

Celotex for Insulating Roofs and Attics

the house, it gives protection where it is most needed. The heat and adds an attractive room. While lining the attic cannot effect the same results as Celotex used throughout Because heat rises, 60% or more of the avoidable heat loss in houses without Celotex, is through the roof. Here Homes already built can still be economically insulated and made comfortable by lining the attics with Celotex heat leaks through the roof it is important to line the markable saving in fuel, but also keeps out excessive sun roof is the thinnest and least protected part of the house. are a few very effective methods for insulating roofs and Because the greatest amount of attic. A Celotex lining in the attic not only effects a re-Insulating Cane Board.

Roof and Attic Insulation should be Celotex Standard 38" thick. If only a fire scuttle is available to enter Building Board, 4' wide, 7' to 12' long and 7/16" and the attic, Celotex Lath should be used. It is 18"x48" and of the same thicknesses as standard board.

members, leaving a $\frac{3}{16}$ " space between all boards. Nail to the intermediate frame members first, with standard galvanized roofing nails $1\frac{1}{2}$ " long, with $\frac{3}{8}$ " heads, spacing nails 6" apart, then around all edges spacing nails rafters, running the boards lengthwise with the framing Celotex shall be applied directly to the studs, joists or If Celotex is to be left natapart.

angle over all exposed surfaces. See ural use 5d finishing nails driven at an page 156 for interior finish.

Over Roof Rafters-When Celotex is to be covered with rigid roofing, such as wood shingles, slate or tile, it should be nailed directly to the roof

rafters and 1"x2" furring strips shall be nailed horizontally over it, driving the nails into the rafters.

roofing or asphalt shingles, apply wood sheathing When the roof is to be covered with roll or sheet either over or under the Celotex. In all cases roofing nails must be long enough to penetrate the wood sheathing.

bring the Celotex to close contact with the side wall Under Roof Rafters-When Celotex is applied to sheathing or plate, and carefully close all spaces along the under side of roof rafters, extend it to a tight ioint with the insulation on all side walls. In houses already built, where there is no side wall insulation, eaves where hot or cold air leakage may occur.

If attic rooms are to be plastered, see page 162, Celotex Lath as Plaster Base. Over Attic Joists-Apply Celotex directly to attic Lay wood floor over Celotex, covering that portion of floor joists, extending to a tight joint with side wall. the attic to be used for storage space or living quarters; nail through to the joists. Over Attic Floors-If attic is already covered with a floor apply Celotex to the floor in regular manner. Wood flooring, carpet, canvas or linoleum may then be laid over Celotex, if desired. Nail Celotex Lath in like manner.

projections the Celotex shall be cut and fitted and shall not be forced into place at any Over Flat Wood Decks-The roof deck shall be constructed in the usual manner to the required slopes cant strips shall be installed after the Celotex is in place. Apply the Celotex over wood decks in the regular manner. At all parapet walls and other roof and swept clean of all dirt before laying Celotex.

crete decks, for commercial and inpoint. Any type of roof covering may be applied to Celotex. Over wood, metal or condustrial buildings or roofs of large area, send for Specifications and details for Celotex Roof Insulation Note:



Before Lining with Celotex.

Continued on next page

An Attractive Room Plus Insulation.

157

sheathing

Celotex for Interior Finish

and sound deadening finish and decoration. adaptable to modern styles of architecture for interior Celotex adds the advantages of economical insulation addition to providing this unusual beauty at low cost, had by staining, painting or stenciling Celotex. Board and its natural tan color make it unusually The pleasing texture of Celotex Insulating Cane Many beautiful effects may be

used to produce certain effects. shall be used. In some cases Celotex Lath may be For interior finish Celotex Standard Building Board



Celotex Provides an Ideal Surface for Interior

and other heavy mouldings. For interior finish a true, struction headers shall be provided back of chair rail sults; therefore use select straight framing members. even framing surface is imperative for satisfactory redesign, spacing studs, joists or rafters not more than 16" o.c., and using extra studs, joists, rafters and to conform to the design of board spacing or paneling headers if necessary. Framing-Studs, joists and rafters shall be framed Application of Celotex—Apply Celotex in the regu-For the most substantial con-

edge. bers first, spacing nails 3" apart, then nail around all edges spacing nails 3" apart and 3%" away from the ar manner, nailing to the intermediate framing mem-If joints are to be covered use standard galvanized Leave 3/16" space between all boards.

roofing nails 11/2" long with 3/8" heads around all edges for nailing all exposed surfaces of the Celotex. to be covered and 5d finishing nails driven at an angle,

apart. Counter sink all finishing nail heads. If joints are not covered use 5d finishing nails throughout, driven at an angle, spacing all nails 3"

of sanding or cutting with a sharp knife or fine toothed Bevel Joint-Beveled joints may be had by means

Painting and Decorating

used or paint effect produced. may be painted or stained to suit. Any paint may be Celotex as interior finish may be left natural or it

paint is used, the surface of Celotex must be sized or Sizing-To secure maximum coverage, when oil

primed. With

With stains, no sizing is necessary.

Glue Sizing—Dissolve 1½ pounds of shell or chip glue in 1 gallon of boiling water and apply warm. Use no size that has been mixed over eight hours.

Staining

according to the Manufacturer's Specifications, as for Oil or Spirit Stains—Any commercial stains used for dyeing wood may be used over Celotex. Applied

Water Stains—Water stains are mixed and applied according to the Manufacturer's Specifications.

A satisfactory stain for Celotex is made by mixing

of a paste colored with water stain, other tints may be mottled into them after they have been applied to the Celotex, thereby producing Tiffany or antique effects. Any stencil effect can be applied over glue size or paste water stains in Fresco or Japan colors. stains with glue sizing or paste in accordance with may be produced. the Manufacturer's Specifications. Any color or tint Due to the slow drying qualities

Kalsomining

Waterproof

on self furring metal

1x2"stri

Celotex attic

Celotex on attic floor joists

4"strips of wire cloth cemented to Celotex

Kalsomine may be applied over either sized or unsized Celotex surfaces. When sizing is not used, add small amount of glue to mixture. Mix and apply according to the Manufacturer's Specifications.

Ashlar Stone Effect

ber 19. The texture of Celotex has made it a unique material for interior decoration cut into Ashlar Stone pattern, as shown in illustration. Celotex Ashlar Stone is generally left unsanded so that the surface painted with lead and oil or treated with plastic paint. For details pertaining to the application of Celotex Ashlar Stone Design, write for Technical Note Numhas the regular Celotex texture. Sometimes it is



Celotex Ashlar Stone Treatment.

Note: Many other beautiful decorative effects may be had over Celotex. Here are a few.

Wall Paper
Sanitas, Wall Canvas, etc.
Plastic Paints Various Tile Effects Wood Panel Effects

treating Celotex for interior finish, write to The Celotex Company, 919 N. Michigan Ave., Chicago, Ill. For specific information on various methods of

SECTION OF BUILDING SHOWING TYPICAL USES OF CELOTEX

NATIONAL BUILDERS CATALOG

Continued on next page

WEATHERWOOD

A STRUCTURAL INSULATING BOARD

Manufactured by

CHICAGO MILL AND LUMBER CORPORATION

III West Washington Street

CHICAGO, ILLINOIS

Products and Characteristics

per hour, per sq. ft. per degree F., per inch thickness. Its average conductivity of .32 B. t. u.'s Weatherwood, full 1/2 in. and 1 in. thick, 4 ft. wide by 8, 9, 10 and 12 ft. long. Weatherwood has an established

For Weatherwood Insulating Lath, see page 163. Full weight is approximately 600 lbs. per 1,000 sq. ft. of halfinch material

1/2 in. and 1 in. thick, 18 in. by 48 in. units, with exclusive tongue and groove joint on 48 in. edge.

Description

Weatherwood is manufactured by fabricating weatherproofed hardwood fibers into boards of high thermal insulating efficiency and great structural strength . . . the only insulating board made of hardwood. It is a durable, sterile, all-wood product. The character of its hardwood fibers and the process of manufacturing insure a board that resists time and the elements as well as performs, in high degree, its primary function of preventing heat losses in winter and excluding the penetrating heat of summer.

Weatherwood has an exceptionally pleasing surlight enough to permit finishing with any color of Its color is natural deep cream . . . paint or stain. face finish.

sheathing under wood siding, shingles, stucco or any type of masonry . . . (2) as roof boarding under shingles, slate, etc. . . . (3) between rough and finished floors for sound deadening . . . (4) as interior finish, either natural, painted or stained . . . (5) as exterior wall surfaces on low cost buildings, Weatherwood Insulating Board is used as, (1) such as garages, summer cottages, etc.

The cross section plate on the opposite page shows many of the building insulation uses of Weatherwood. See page 163 for description of Weatherwood Insulating Lath

SPECIFICATIONS

For use as Sheathing under Wood Siding, Brick, Stucco or Shingles.

Weatherwood should be applied lengthwise with the studding, joists, or rafters, using wherever pos-

NATIONAL BUILDERS CATALOG

sible, the size boards which can be applied without splicing in order WOOD Veather

to get sufficient length. However, where it is necessary to splice two boards together, always use a header

Spacing—Weatherwood boards should be spaced strip beneath the joint. " apart at all edges. Nails and Nailing-Six-penny common nails, spaced 3" on center at edges and 6" apart on intermediate studs should be used in nailing Weatherwood to the framework,—first to intermediate studs, and then on all edges. Note.—Wood siding joints must butt on studding. For brick veneer, nail brick ties through Weatherwood to galvanized wire or metal lath nailed over Weatherwood to studding. Where shingles are used, wood nailing strips, studding. Stucco must be reinforced with self-furring spaced to fit size of shingles, must be nailed over Weatherood to studding.

For Interior Use

Spacing-Weatherwood boards should be spaced 1/8" apart at all edges.

Nails and Nailing-Two-inch finishing nails about ' apart should be used in nailing Weatherwood to Then nail the framework, first to intermediate studs, the nails being set slightly below the surface of the board after having been driven at an angle. around all edges.

obtained over Weatherwood, by using either wood panel strips or by making special panel strips of Paneling-Any desired paneling effect may be Weatherwood.

essary to thoroughly size the surface with any dependable glue, water, or oil size. After sizing, any Painting-Before painting Weatherwood, it is nectype of oil or water paint, lacquer or enamel, may be used over Weatherwood with excellent results.

four-penny common, box or blued nails should be used and spaced about 9" apart, nailing center studs first. When a plastic paint is used, panel strips are eliminated. All manufacturers of plastic paints specify the use of a narrow strip of fine galvanized wire Plastic Paints-If a plastic paint finish is desired, screen over joints. Plastic paint should be applied to manufacturer's specifications.

GENERAL ADAPTABILITY OF WEATHERWOOD WEATHER WOOD =

For Exterior Use

should be spaced 1/8" apart at all edges. Spacing - Weatherwood

twelve inches on center. Nail to the intermediate studs first, then nail the should be nailed lengthwise with the studding, using six-penny nails, spaced Nailing - Weatherwood

oughly sized with any dependable apply two coats of any good house Finishing-After the Weatherwood paint in accordance with manufacturhas been put in place, it should be thor-After that, water, glue, or oil size. er's specifications. All joints should be covered with wood batten strips, nailed securely to the studding.

plication of Weatherwood, write for "The Weatherwood Handbook for Carpenters and Contractors," which is For further information on the apavailable to you free.

Experience and Responsibility

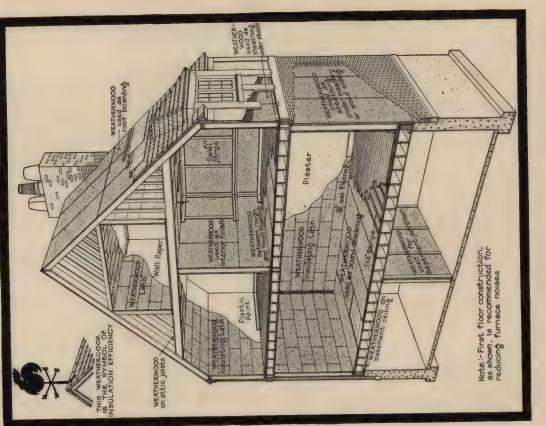
hardwood timber in Louisiana, Arkansources include tremendous acreage of sas, Mississippi, and North Carolina .. sufficient to insure a perpetual pany, with its vast research and strong in the production and distribution of lumber products since 1881. Its re-Weatherwood is manufactured and This comfinancial resources, has been engaged marketed exclusively by Chicago Mill and Lumber Corporation. supply of raw material.

Availability

dealer about it or write for sample and copy of the book, "The NEW Stand-Weatherwood is being supplied to lumber dealers everywhere. Ask your ard of Construction."

Information

ments of Chicago Mill and Lumber The service and technical depart-Corporation have prepared a series of complete handbooks, some of which are shown here and which may be secured on request.





MASONITE STRUCTURAL

Manufactured by MASONITE CORPORATION

111 West Washington Street CHICAGO, ILLINOIS

MASONITE STRUCTURAL INSULATION

Its Manufacture and Adaptability

Manufactured from wood fibre by a special process of explosion and felting. It has exceptional strength and is manufactured for use as structural sheathing, sound deadener, plaster base, for interior finish in its natural state or with paint or other popular wall finishes applied directly to it.

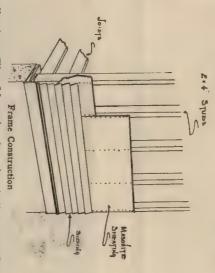
Write for complete book of specifications and details.

Insulation Value
Tests show a heat insulating value of 0.321 per in. thickness per square foot per degree Fahrenheit difference per hour. Masonite comes in boards 4 ft. wide, approximately 7/16 in. thick, and up to 12-ft. lengths. Average weight approximately 72 lbs. per 100 sq. ft. When used as an insulator, sheathing, plaster base, under roofs, or floors, the building is made warmer and quieter, and a decided saving in fuel is effected.

Specification No. 1—Frame Buildings with Wood Siding or Shingle Finish.
Material—Str

Material—Structural insulation for sheathing all exterior walls shall be Masonite Structural Insulation approximately 7/16 in. thick.

Framing—Studs, joists, sills and plates shall be framed as in ordinary frame construction. All studs shall be placed accurately on 16-in. centers. Where horizontal joints are necessary, use 2x4 in. headers cut in between the studs. Any odd spaces required to make over-all lengths shall be located in or near the middle. No extra cross bracing other than commonly used required.



Application—The Masonite boards shall be applied vertically and directly to the framework, allowing ample bearing

surface for nailing on all edges.

Board shall be placed 3/16 in. apart at sides, top and bottom. Do not force boards into place.

Around window and door frames, or where tight joints are wanted, bring Masonite to moderate contact. Nail 3-in. strip of Masonite to back of frames.

Cut Masonite to fit snugly around rafters that project be-

yond face c face of studs

Nailing—Beginning at center, nail Masonite first to intermediate studs, and then entirely around all edges of board to studs, sills, plates or headers. Use standard 1½ in roofing nail, with 36-in, heads, all nails to be 4 in, apart and 36-in from all edges. Drive nails flush with surface of Masonite. Sidewalls—Wood siding is applied directly over Masonite without the use of building paper, nailing through into studs. Siding boards shall butt on studs.

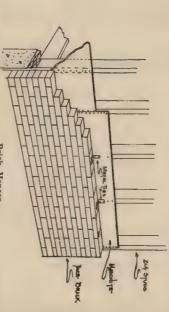
Shingle Walls—It walls are to be shingled, furting strips 1x2 in, shall be applied over Masonite and nailed through into

NATIONAL BUILDERS CATALOG

facturer's specifications studs. Shingles to be applied in accordance with the manu-

Specification No. 2—Frame Buildings Having Either Stucco, Stone or Brick Veneer Finish—
Material—Structural insulation for all exterior walls shall be Masonite Structural Insulation approximately 7/16 in.

Stucco Finish—Stucco mesh shall be applied over Masonite using a furring nail of sufficient length to penetrate well into the stud. Self furring stucco mesh may also be used. Stucco to be applied in accordance with manufacturer's specifications.



Brick Veneer

Stone or Brick Veneer—Galvanized iron wall ties shall be used every sixth course of brick. A ½-in, space shall be left between the brick and Masonite.

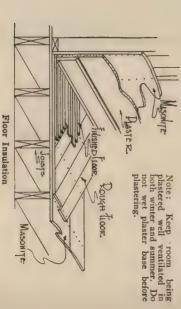
Material used as insulation and plaster base. Specification No. 3—Plaster Base and Insulation for Buildugs, Including Partitions and Ceilings—
Material—Masonite Insulating Lath, size 4x2 ft., approxinately 7/16 in. thick with the 4 ft. edges shiplapped shall be

Framing, Application for Framework and Nailing—Framework see Specification No. 1.

Nailing use 5d. box nails, 4-in. on center, first nailing to intermediate studs, then nailing edges.

Application for Masonry Walls—Wood furring strips 1x2 in. shall be securely anchored to masonry walls and ceilings, in approved manner, on 16-in. centers.

Plaster—Quick setting gypsum plaster shall be used. Plaster should set in about 1½ hours, and not exceeding 2 hours. Use an accelerator if plaster tails to set in 2 hours. Apply the plaster directly to the Masonite. The first coat, or scratch and brown coat together must have a thickness of not less than ½ in. and must be thoroughly dry before applying finish coat. Total thickness shall be not less than ½ in.



MASONITE STRUCTURAL INSULATION

Specification No. 4—Interior Finish-Material—Structural insulation for a shall be Masonite Structural Insulat proximately 7/16 in. thick. Structural Insulation apfor all walls

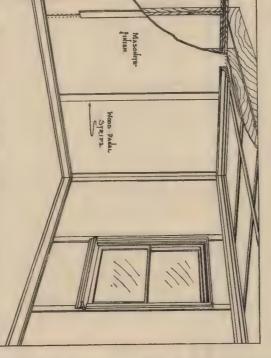
batten strips. fication No. 1 for framing. Nailing should be 4d. finishing nails, driven at approximately a 30° angle, on intermediate studs. Either a 1½ in roofing nail or a 5d. box nail on ends and sides. Use 6d. finishing nails for Masonite Framing Application and Nailing—See Speci-cation No. 1 for framing. Nailing should

Trim—Joints to be covered with wood battens 1x3 in. or suitable width, not less than 2 in. wide. Masonite battens may be used to secure more artistic finish. Baseboard and other trim to be as commonly used.

painted over size or priming. Painting and Decorating—Masonite may be left in its nat-al pleasing finish, or it may be stained without sizing, or

Specification No. 5—Rederside of Wood Rafters—Note: This form of ap 5-Roof Insulation Applied on the Un-

Note: This form of application is suitable for insulating roofs, and for new shingle roofs of wood, slate, zinc, copper and other types of roof covering materials, which require a solid wood deck for nailing.



Masonite Used as an Interior Finish

Material—Roof insulation shall be Masonite Structural Insulation approximately 7/16 in. thick as manufactured by the Masonite Corporation,

in. on centers. Whenever it is necessary to have a horizontal joint in the Masonite, a 2x4 in. header shall be cut in between the rafters. Rafters may be spaced 24 in. on centers when considered desirable, but when so spaced, 2x4-in. headers shall be cut in between all rafters, on not to exceed 36-in. centers. Framing—The rafters shall be spaced on centers. Whenever it is necessary

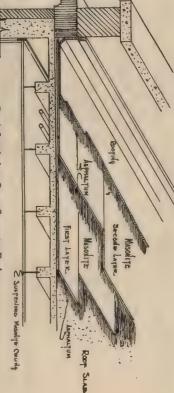
Application—The Masonite boards shall be applied lengthwise of and directly to the rafters, and set in place so as to have a bearing for nailing along all edges.

Leave 3/16-in, space between adjoining

Leave 3/16-in, space between adjoining boards, also at top and bottom of boards.

Around openings and at corners, or where a snug joint desired, the Masonite shall be fitted carefully and brought moderate contact. Do not force into place.

Wood Decks—
Wood Decks—
Material—Roof insulation shall be Masonite Roof Instion size 3x4 ft. or 4x4 ft. as manufactured by the Masc Corporation, Chicago, III. the Masonite



Roof Insulation Over Concrete Deck

Concrete Deck—Preparation—The roof deck shall be reasonably smooth, dry, well cured and free from all rubbish before applying Masonite. If not well cured, the concrete deck shall be primed, using not less than one gallon of standard concrete primer per 100 sq. ft.

Application—Mop concrete deck solid with a heavy uniform coat of hot roofing pitch or asphalt, using not less than 30 lbs. per 100 sq. ft. Masonite shall be laid in asphalt or low melting point pitch and pressed firmly into place while the asphalt or pitch is hot. All edges of Masonite shall be brought to moderate contact. Do not force boards into place. Transverse joints and joints of the successive layers shall be broken.

If more than one layer of Masonite is to be applied, mop the top surface of the previous layer in the same manner than the same manner.

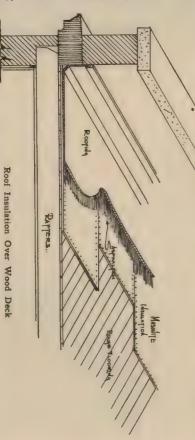
as stated above, but without primer.

Wood Deck—Preparation—Roof deck shall be made of seasoned, dressed and matched lumber, properly nailed, all nails driven flush with boards. The deck shall be laid to slope and pitched to drain, as shown in plans and specification. Deck shall be swept clean before laying Masonite Insulation. Nail cant strips around walls and required.

Application—The first layer of Masonite shall be nailed to wood deck, using 1½-in. standard roofing nails, with %-in. head, and spaced 12 in. on centers, nailed flush with surface. Nails in body of board to be staggered. If more than one layer is required, mop the surface with roofing pitch, or asphalt using not less than 30 lbs. per 100 sq. ft. Press Masonite firmly into the hot asphalt, or

roofing pitch, breaking all joints

Steel Deck—Preparation—All steel decks must be free from grease, dirt, oil, etc., and the weather surface properly coated with suitable asphalt primer. All rubbish must be removed, and the surface swept clean. All sharp



angles to be rounded out so as to avoid rough, sharp edges. Lay a strip of roofing felt 6 in. wide, uncemented, over expansion joints at ridge, cementing the Masonite over same.

the Application-The application is identically the same as in case of concrete and gypsum decks. Apply the rooting he usual manner over the Masonite, according to the

CELOTEX INSULATING CANE BOARD

Made by THE CELOTEX COMPANY

919 North Michigan Ave., CHICAGO, ILLINOIS

Sales distributors throughout the World

Products

CELOTEX LATH FOR PLASTER BASE.

For Celotex Standard Building
Board for Wall and Roof Sheathing,
see page 152.

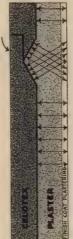
For Celotex Insulating Cane Board, see pages 154-157.

Description

Celotex Lath is 18"x48", 746" and 78" thick. It is delivered on the job in convenient bundles just as it is packed at the Celotex Mill.

The beveled edges provide reinforcement against plaster cracks at all joints—the ship-lap joints eliminate open spaces, the common cause of lath marks. These tight joints also keep the wet plaster away from the wood framing members. Celotex Lath provides an ideal surface for the proper drying out and curing of the plaster.

Celotex Lath presents an ideal surface for plastering. It is the only lath made from the long, tough fibres of



Beveled Edges Reinforce Plaster at All Joints. This cross section shows how the bevel edge provides for additional plaster at the joint. A reinforcement against cracking.

cane. These fibres protrude from the surface and become imbedded in the plaster forming a secure and permanent bond. Celotex Lath is especially designed to reinforce against plaster cracks and eliminate lath marks, thereby permanently protecting the beauty of plastered walls and ceilings. Then, too, it gives insulation, the indispensable requirement for all year comfort in the modern home.

Application

Framing—Studs, joists and rafters shall be framed as in ordinary frame construction, spaced 16" o.c.

Application—The lath shall be applied running long edges at right angles to the framing with beveled edges exposed to receive the plaster. Securely nail in place with special blued plasterboard nails 11%" long with 5/16" heads, using 5 nails per stud or joists 20 nails per lath. Stagger or break joints with the

preceding lath course.

Where cutting is necessary, the lath shall be scored with the lather's hatchet and broken along line of

NATIONAL BUILDERS CATALOG

scoring. Where piecing out is to be done use strips of Celotex. Do not

TEX

CELO

INSULATING CANE BOARD

use wood.

All interior angles shall be rein-

forced with metal or wire lath, also where joints of frame and masonry occur. All exterior angles shall be reinforced with standard metal corner bead.

Plastering

Do not moisten Celotex Lath before or after nailing

in place.

Prepared Gypsum plaster containing not more than 10% of lime shall be used for both scratch and brown coat.

The scratch and brown coat together shall not have a thickness of less than %". The total thickness of plaster including the finish coat shall not be less than

Darby strokes must be in the direction of the studs and joists with the darby or rod spanning two or more studs or joists.

Note: Send for the Celotex specification book, "Application of Celotex Standard Building Board and Celotex Lath."



Celotex Lath grips plaster with an unyielding bond. Note the "V" groove into which extra plaster is forced.

WEATHERWOOD INSULATING LATH

Manufactured by

CHICAGO MILL AND LUMBER CORPORATION

111 West Washington Street

CHICAGO, ILLINOIS

Product and Characteristics

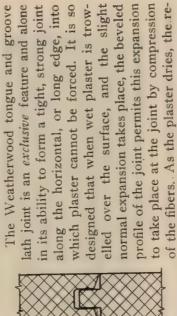
Weatherwood Insulating Lath, full 1/2 in. and 1 in. thick, 18 in. by 48 in. units, with exclusive tongueand-groove joint on 48 in. edges.

Half-inch thickness wrapped 12 pieces (72 Sq. ft.) to the package. One-inch thickness wrapped 6 pieces (36 Sq. ft.) to the package. Weatherwood has an established average conductivity of .32 B. t. u.'s per hour, per sq. ft., per degree F., per inch thickness. Its weight is approximately 600 lbs. per 1,000 sq. ft. of half-inch material.

For Weatherwood Insulating Board, see pages 158

Description

Weatherwood Insulating Lath is manufactured by fabricating weatherproofed hardwood fibers into plaster base units of high thermal insulating efficiency and great bracing strength . . . the only insulating lath made of hardwood.



silient fibers resume their original position and permit no opening of joints along the edges. Strains at the joints are eliminated and hence there is less tendency to crack.

This joint also eliminates the springing of the units out of true when scratch and brown plaster coats are applied, thus further assuring a smooth, permanent plaster finish.

This tight joint also eliminates lath or joint marks which otherwise appear on the plaster surface due to condensation of moisture and collection of

Weatherwood Insulating Lath provides an exceptionally strong bond between the base and plaster,

Weatherwood

foot. Moisture cannot pass through
Weatherwood Lath, and this characteristic protects the frame from plaster moisture.

o Application

Weatherwood Insulating Lath should be applied directly to studding, ceiling joists or rafters, set 16 inches on centers. Apply lath in such a way as to stagger end joints. The rough, textured side should be exposed. Space all lath one-eighth inch apart at ends. In nailing use 4-penny common, blued or box nails, spaced 5½ inches on center into each stud, nails, to center studs first. On long sides of each board, nails should not be more than one-half inch from the edge. Use small-headed nails. On Weatherwood, large-headed nails are unnecessary. For full one-inch thick Weatherwood Insulating Lath, use 6-penny common, blued or box nails.



All-Metal Weather Vanes Furnished

Weatherwood dealers will supply these practical, all-metal weather vanes to homes properly insulated throughout with Weatherwood. These unusually attractive weather vanes carry no advertisements of any kind.



Information

Our service and technical departments have prepared, among others, a Handbook for Plasterers which is thorough and complete and which every builder and plasterer should have. Write us for your copy.



EELTEX FOR PL

ASTER

AND STUCCO

Manufactured by NATIONAL

WOOD LATH

WOOD LATH BUREAU, INC.

44 Whitehall Street, New York, N. Y.

Advantages of Using Wood Lath for Plaster Base

Dependability

desirability of using wood lath for the plaster base. contractors cannot afford to overlook this fact, and the struction for new houses, prospective home builders and one hundred years. In considering the details of concessfully in the construction of American homes for over Wood lath of the present type has been used suc-

satisfactory appearance of the finished walls and ceilings is assured with this type of construction. The first cost is less than other bases and the permanent,

that of the usual "two nail" diagonal sheathing on the outside walls. stiffening effect shown by tests recently conducted by Wood lath and plaster make a house stronger. Forest Products Laboratory is nearly twice

ing it possible for the plasterer to produce the finest vides the stiffest base on which to apply the plaster, mak-Wood lath not only strengthens the building but pro-

Resistance to Injury

showed that the least damage was caused to the samples made up on wood lath. plaster to injury and cracking on different plaster bases, Similar tests conducted to determine the resistance of

work of the building out of alignment subjected to undue pressure through settlement of little less flexible than a pane of glass, and will crack if work of the building are properly constructed. Plaster is foundations or any other cause that may throw the frameplaster from cracking, unless the foundation and frameplaster base, in itself, not even wood lath, will prevent The fact should not be lost sight of, however, that no

Fire Resistant

and plastered partitions act as an effective fire retardant, wood lath carries the lowest rates of insurance. While it is not generally appreciated that wood lath

Insulating Properties

more agreeable living conditions. transmission from one room to another thereby creating construction are highly effective in deadening sound The insulating properties of wood lath and plaster

the house less expensive to heat in winter and cooler plaster walls than for other types of construction making The heat loss is also much less for wood lath and

Effective "Keys"

proper spacing of the lath, 1/4" to 3/8" apart, an excellent lath is that the plaster adheres strongly to wood, and by "key" is provided for the plaster. One of the best recommendations for the use of wood

Сніслоо, Ілл., Strauss Bidg. Сімсімнаті, Оніо, Dixie Terminal Bidg.

PHILADELPHIA, Bldg.

ATLANTA, GA., Walton Bldg.
BUFFALO, N. Y., Builders Exchange
Bldg.

Union Trust Building, PITTSBURGH, PA.

BRANCH OFFICES

DETROIT, MICH., Dime Bank Bldg.
Los Angeles, Calif., 1358 Wholesale
St.
New York, N. Y., 41 East 42nd St.

Y., 41 East 42nd St. Pa., Franklin Trust

St. Louis, Mo., Railway Exchange Bldg.
San Antonio, Texas, Builders Exchange Bldg.
San Francisco, Calif., 351 Bryant St. Syracuse, N. Y., 261 Buckingham Ave.

Division of Pittsburgh Steel Company

STEEL FABRIC COMPANY

GENERAL OFFICES

"keys" obtainable with wood lath which hold the plaster firmly in place. The accompanying illustration shows the thick, strong



Specifications, Wood Lath and Plaster

Quality—Wood Lath shall be No. 1 Lath or No. 2 Lath (specify which).

Size—Wood Lath shall be not over 15% inches wide, not less than 5½ inch nor more than 3½ inch thick, and either 48, 36 or 32 inches long. The usual size tolerances admitted by the lumber manufacturers' grading rules for No. 1 lath will be

Wetting—Lath shall be thoroughly soaked immediately before it is applied and shall be well wetted before plastering.

Application—Wood lath shall be nailed to every stud, joist or bearing with at least one three-penny fine No. 16 gauge wire nail. Joints shall be broken, with not over 7 lath on the same bearings consecutively. The spacing between lath shall not be less than 36 inch for lime plaster, nor less than 14 inch for hard plaster. No diagonal or vertical lathing shall be permitted. Lath on ceiling shall run in one direction only. In no case shall the spacing of bearings exceed 16 inches on centers.

Grounds—Wood grounds shall be at least 2%2 inch thick, measured from face of stud to face of finished plaster.

Framework—Studs, joists, and other bearings for lath shall be spaced on either 12-inch or 16-inch centers; no bearing face shall be over 4 inches in width unless furring strips are used.

are rows of V-shaped metal rib stiffeners which mesh of welded steel wires (heavily galvanized). (c) Across the back of STEELTEX for Plaster major units as follows: (a) The heavy, tough, fibrous backing onto which is woven (b) a 2"x2" Ribbed STEELTEX Lath for Interior Plaster STEELTEX lath board-like rigidity. eliminate deflection or sag, giving Ribbed STEELTEX lath is composed of three

STEELTEX . . . same principle . . . same protection, Ribbed STEELTEX lath for interior plaster, STEELTEX for stucco, (pages 173 and 175); STEELTEX for brick or stone veneer roofs (concrete and gypsum), (pages 176-177).

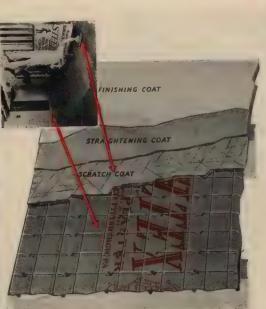
NATIONAL REINFORCING (welded wire fibrous backing).

STEELTEX... (page 174); STEELTEX lath for floors and STEELTEX (welded wire mesh with integral There are four styles of

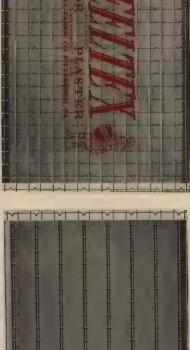
driveways, runways, canals, concrete pipe, gunite and for all other types of plaster and concrete construction (see pages 178–179, 172). fabric),-for buildings, roads, streets, sidewalks,

General Information

cold-drawn, galvanized wire mesh attached to the various types of backing. This integral backing consists of a double waterproof membrane for stucco, a heavy absorbent fibrous backing for plastering and a cord-reinforced backing for floors and roofs. In the different styles of STEELTEX the galvanized wire mesh varies in gauge and spacing according to the purpose it is to serve. The attachment of the backing to the reinforcing element of STEELTEX is accomplished by independent All four styles of STEELTEX have the same principle and offer the same protective qualities. Each style of STEELTEX, however, is specifically designed and manufactured to function efficiently according to the particular requirements for which each type is intended. Briefly, STEELTEX is composed of electrically-welded, furring wires or ribs, as the case may be, and so manufactured as to offset the backing away from the plane of the fabric a proper distance to assure thorough embedment of the wires of the fabric within the plastic material when poured, plastered, or otherwise deposited against the backing.



Above: A cutaway section of a wall lathed with ribbed STEELTEX. Note how the network of galvanized steel wires is embedded in the plaster, thus giving protection against plaster cracks. The STEELTEX flovus backing becoming an integral part of the plaster slab, effectively seals the entire surface, thus preventing heat leakage.



Pront or plaster side of a full-size sheet of ribbed STEELTEX for in plaster. Note the network of electrically-welded, steel-reinforcing woven onto the heavy, fibrous backing.

NATIONAL BUILDERS CATALOG

Extending across the back of the ribbed STEELTEX sheet at 334" intervals are rows of V-shaped metal rib stiffeners. These stiffeners, plus the wire mesh and heavy backing, give STEELTEX its board-like rigidity.

Continued on next page 167

Lath for Plaster Ribbed STEELTEN

narily found in a plaster lath. These results are: (1) Reinforcing, (2) insulation, (3) sound deadening, (4) automatic back-plastering, (5) added structural value, (6) added security over suction or plaster keys, (7) angle reinforcement at no added cost, (8) assurance of having proper and uniform thickness of Gives Ten Results-Ribbed STEELTEX for interior plaster is a unique combination and as such produces a combination of ten of wire reinforcement and insulating backing, them not ordidesirable results-many of deadening,

Maximum Plaster, and (10) reack prevention.

Maximum Plaster Coverage—Ribbed STEELTEX provides a surface of board-like rigidity to the plasterer's trowel. The wire mesh, plus the heavy backing, plus the V-rib stiffeners, eliminates deflection or sag and insures The absorbent backing securely grips the wet mortar, holding it in place until after it has set around the rein-(9) prevention of "zebra stripes" from showwasted (no keys); all of the mortar functions in the slab. maximum plaster coverage. Absolutely no mortar forcing wires. plaster.



Ribbed STEELTEX lath for plaster comes in conveniently-handled sheets, Cutting or shaping them to fit door and window openings is a simple and rapid operation.

reinforced plaster slab exactly like reinforced concrete in principle. The reinforcement of STEELTEX consists of a complete network of 16 gauge cold-drawn, steel wires welded on 2" centers. The steel wire reinforcing mesh is heavily galvanized. This square mesh or fabric becomes automatically embedded in the plaster, Reinforces Plaster With Steel-When Ribbed STEELTEX is plastered, it makes a one-piece, steel-



Ribbed STEELTEX is quickly nailed to the studs and then plastered the regular way. Note how the walls are blanketed by the heavy, fibrol backing. This prevents air infiltration which means insulation, minimiz sound transmission and assurance against lath or joint marks.

NATIONAL BUILDERS CATALOG

giving positive reinforcement to the plaster slab directions, and reducing plaster cracking hazards points, distributing strains equally in all

applied over STEELTEX, the heavy fibrous backing has become an integral part of the plaster slab, sealing it against the infiltration of air. Thus every room is blanketed and insulated against heat, cold and sound. The tough, fibrous backing of Ribbed STEELTEX lath was developed by the National Steel Insulating Qualities-After plaster has been to the minimum.



The plaster, as applied, automatically flows under and around the network of steel wires,—thus actually embedding the wire in the plaster, strengthening the plaster slab throughout, and acting to prevent plaster cracks.

Fabric Company's Industrial Fellowship at the Mellon

Institute of Industrial Research.

Fire Resistant—Ribbed STEELTEX
UNDERWRITERS one hour fire rating.

Detailed Specifications of Lathing for Plaster

All interior walls, partitions and cellings (where so specified and designated plaster) shall be lathed with STEELTEX, as manufactured by the National Steel Fabric Company, Pittsburgh, Pennsylvania, a 2"x2". 16 gauge, cold-drawn, electrically-welded, self-furring Galvanized Wire Fabric, to which a tough fibrous backing is secured by means of a 26 gauge V-shaped channel rib.

STEELTEX shall be attached to walls and ceilings with 4 D common wire nails through each alternate rib into each alternate stud or joist. All sheet joints shall be staggered on both ceilings and side walls.

Each sheet shall be placed so that all joints shall overlap the face of the fabric. Plaster over STEELTEX shall be finished to 3%" thickness.

protection, partitions full 34" thickness with to plastered on both faces



Continued on next page

STEELTEX

Ribbed STEELTEX Lath for Interior Plaster

mum results in plastering, start lathing work on the ceiling at the corner of the room. After apply second and succeeding sheets as shown in the accompanying illustrations. When the lathing on the ceiling is completed, apply the sidewall lathing. and Lapping-To obtain maxithe first corner sheet has been nailed in place,

Sidewall sheets should be applied from the



be made between studs or joists but shall lap over studs or joists. Ribbed STEELTEX sheets should be nailed with four-penny common wire nails, or STEELTEX hooked plaster ceiling down to the floor so that all horizontal laps shall take place over the upper sheets. All sheet joints should be broken or staggered on both ceilings and sidewalls. No joints shall





After Ribbed STEELTEX sheets have been applied on the entire ceiling, sheet number 5 is started at the corner. This sheet is also bent around the corner to form the corner angle. Note how the sheets on the ceiling have all been bent to form a 6-inch apron. Sidewall sheets shall be lapped on top of apron of ceiling sheets.



(2)

Sheets numbers 5 and 6 are shown applied. The indicating arrow points to the angle that has been formed by the bending of sheet number 7 around the sidewall corner. Note that sheet number 6 has been cut off at the stud to break the joints: sheets 5 and 7 are full size.



The above analytical drawing illustrates the proper method of lathing Ribbed STEELTEX for interior plaster. Note how all joints are properly broken and staggered. Sheet number I is the key sheet. Always start at the corner on the ceiling as indicated by sheet number 1.....complete lathing on ceiling......then start sidewall lathing as indicated by sheet number 5, and work down to floor.

The illustration above shows application of sheet number 4 with sheet number 3 already in place. Note the 6-inch apron on sheet number 3, the same as on sheets numbers 1 and 2. Successive sheets for ceiling lathing are now easily and accurately applied. The above picture shows clearly how this application method breaks the joints.

Ribbed STEELTEX for Interior Plaster

Types of Installations

tive shapes. corners, niches, arches and other unusual decoraadapted to forming cove ceilings, curved ceilings, rapidly on average work and is unusually well cidedly flexible in its application. Ribbed STEELTEX for interior plaster is de-It goes up very

For suspended ceiling plaster and solid and hollow partitions, Ribbed STEELTEX is readily and economically applied by means of the

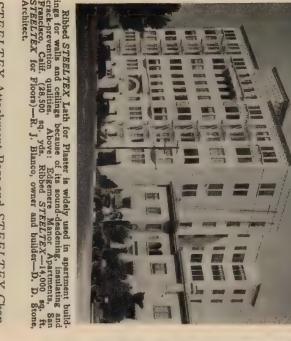


Shaping STEELTEX to fit ceiling and wall contours, offsets, and arches presents no difficulty. It is easily bent and holds its shape.

supply dealers everywhere. STEELTEX is carried in stock by up-to-date building apartments, schools, hospitals, hotels, churches, residences, industrial housing projects, U. S. Government work, public and private institutions, office buildings,



A typical cove ceiling application is shown above. Ribbed STEELTEX is used to form the cove. This adaptability of STEELTEX to forming and shaping is another reason why it is specified and used for all classes of plaster work.



STEELTEX Attachment Bars and STEELTEX Channel. (See pages 169–171). Because it combines insulaconstruction. forcing plaster lath it is well adapted to this type of tion and sound deadening with the qualities of a rein-

tor ceilings (page 169). STEELTEX to standard steel framing (page 171), steel frame house construction (page 180), and to steel joists See pages indicated for the methods used in applying

small, both costly and moderately priced. These include country STEELTEX has been thoroughly tested under various conditions in all types of construction, large and In the many thousands of installations throughout the



Fort George G. Meade (Camp Meade) Maryland showing non-commissioned officers' quarters under construction. This Government operation of 40 houses discent to Washington, D. C., is one of the recent U. S. Government building developments in which STEELTEX lath for plaster was used.

NATIONAL BUILDERS CATALOG

Continued on next page

Attaching STEELTEX to Steel Framing, Joists, by means of STEEL LTEX Attachment Bars etc.,

Stone Veneer to many kinds of steel framing up to 36" centers. If the spacing is greater than 36" the STEELTEX Channel is used.

The STEELTEX Attachment Bar is made up is used extensively as a means of securing STEELTEX for Plaster, Stucco, and Brick or The STEELTEX V-shaped Attachment Bar

of both 19 gauge and 16 gauge, 1" steel strip, formed into a "V" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which formed into a "v" shape for stiffness, to which for stiffness in the stiffness on center. is welded 14 gauge galvanized wire prongs The strip is thoroughly lacquered to

resist rust.



The Attachment Bar is either wire tied or clipped 16" on center to the steel framing (including steel floor joists and light weight beams).

STEELTEX is then attached to the Attach-

ment Bars by pushing the STEELTEX against the prongs so that the prongs puncture the backing, and when the STEELTEX is placed firmly against the Bar, the prongs are bent over the re-inforcing wires on the face of the STEELTEX

holding it securely in place.
The STEELTEX Attachment Bar nished in 16' lengths, 20 to the bundle. Attachment Bar is fur-



ABOVE: A section of STEELTEX Attachment Bar. Note the U wire prongs welded to the V-shaped bar.



ABOVE: The set the STEELTEX A to fit the V-shaped Bar. Application cosimply bend over (See dotted line.) STEELTEX beam clip for Attachment Bar is designed ded member of the Attachment of the beam clip is rapid—r beam flange into position.

AT LEFT: The STEELTEX beam clip holds the Attachment Bar securely in place on the ceiling joist.

AT RIGHT: STEELTEX Attachment Bars are tied by a double turn of 14 gauge galvanized wire to the steel studs as shown.

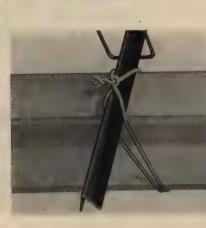


illustration at the left below shows how the attachment bar wire prong punctures the *STEELTEX* backing. The illustration below at right shows how the prongs have been bent back in place over the *STEELTEX* reinforcing wire. When the plaster is applied these wire prongs become automatically embedded in the plaster along with the wire reinforcing mesh of *STEELTEX* (see below). After all Attachment Bars are clipped in place on the wall studs and ceiling joists, it is a simple matter to apply and attach STEELTEX. The backing of STEELTEX is easily punctured by the galvanized wire prongs or projecting ends of the STEELTEX Attachment Bar. The



For flat top, open web joists the same STEELTEX beam clip may be used for attachment—or the attachment bar may be secured by an ordinary wire tie.

and 11/2" STEELTEX Channels STEELTEX Partitions Using 34

hollow, and four inch hollow. These partitions are built up by means of the ¾" and 1½" STEELTEX Channels. The STEELTEX The illustrations on this page show three types Channels have 14 gauge galvanized wire prongs of partitions, namely: two inch solid, three inch welded to the channel at 5" intervals (see illus-Channels. tration at left below).

STEELTEX Channels and Ribbed STEEL-TEX lath for Plaster form a practical, econom-

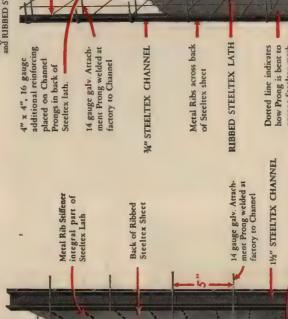
is applied both the prongs of the STEELTEX Channel and the reinforcing mesh of the STEELTEX lath are automatically embedded in the plaster. ical and modern method of constructing partitions. STEELTEX lath is tied to the Channel studs by the backing of the STEELTEX sheet and when bent back means of the Attachment prongs. These prongs puncture engage the STEELTEX reinforcing mesh. As the plaster



using 4/" STEELTEX CHANNELS and RIBBED STEELTEX LATH

Both 34" and 11/2" STEELTEX Channels

are shipped in 16' lengths.



RIBBED STEELTEX LATH Prong bent over engage-ing mesh of Steeltex Lath. Note how it is embedded in plaster along with wire mesh

3" HOLLOW PARTITION wing 1½" STEELTEX CHANNELS and RIBBED STEELTEX LATH

Above: Cross sections and views of 11%" and 3%" STEELTEX Channels. Note Attachment prongs electrically welded to channels.

NATIONAL BUILDERS CATALOG

PLASTER Dotted line indicates how Prong is bent to engage Steeltex mesh Artachment Prong and Steeltex mesh embed-ded in plaster Plaster 2" SOLID PARTITION using %" STEELTEX CHANNELS and RIBBED STEELTEX LATH

Continued on next page

STEELTEX

171

Applying STEELTEX Over Standard Steel Framing, Using STEELTEX Attachment Bars and STEELTEX Channels

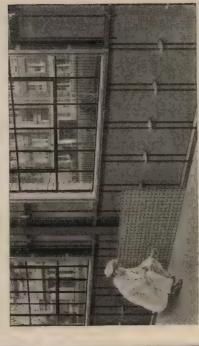
The first illustration below shows how Ribbed STEELTEX lath is pushed up against the prongs of the STEELTEX Attachment Bar or Channel so that the prongs puncture the fibrous STEELTEX backing. The Attachment Bars or walls and ceilings. The cutaway view illustrates how the room is blanketed with *STEELTEX* lath and how the plaster is reinforced by the embed-Channels are spaced on 16" centers on both side-



The STEELTEX Attachment Bar and STEELTEX Channel provide a secure and speedy method of attaching STEELTEX, inded galvanized wire network of STEELTEX.
The STEELTEX Attachment Bar and terior or exterior, to ceilings and sidewalls over metal studs and joists, and over concrete and

Spans up to 24"—use 19 gauge Attachment Bar. Spans 24" to 36"—use 16 gauge Attachment ment Bar. Spans over 36"—use 36,"inch Chanment Bar. Spans over 36"—use 34 inch Chan-

The Channel or Attachment Bar, in accordance with standard practice, is either wire tied or clipped to the steel members. The STEELTEX is then applied Bar or Channel so that the prongs puncture the backing of the STEELTEX sheet. The wire prongs are then bent over to engage the reinforcing mesh of STEELTEX, completing a fast and economical SIEELIEX, completing a fast and economical method of positive attachment to the steel framework. by pushing it against the prongs of the Attachment ing of the STEELTEX sheet.



Ribbed STEELTEX Lath being applied at the ceiling under steel joists.

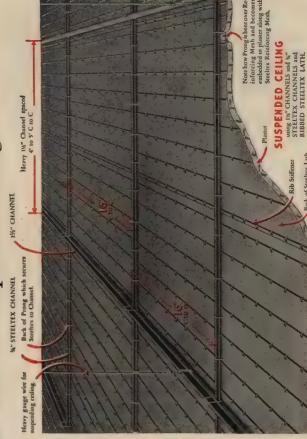
The illustration above shows the application of STEELTEX Attachment Bar running vertically at right angles to horizontal steel girts.

STEELTEX Used for Suspended Ceilings

SPECIFICATIONS

spaced 16" on center, and having 14 gauge galvanized wire prongs welded to channels 5" on center. 1½" channels spaced 4 to 5' on center and suspended the required distance from the floor slab with 8 gauge galvanized wire to which STEELTEX channels with attachment prongs are to be attached with 18 gauge, galvanized annealed tie wire. astered ceilings suspended from flat arches, pan system, or other similar construction shall be constructed %", hot rolled STEELTEX channels,

Ribbed STEELTEX for Plaster shall be attached to STEELTEX channels by pushing the prongs thru the backing and when sheet is placed firmly against STEELTEX channel, these prongs shall be bent over reinforcing wires on face of sheet and pressed in firmly. Joints shall be staggered in placing so that four corners of intersecting sheets shall not occur at any one place. Laps shall be \(\frac{1}{2}\) on long side of sheets and \(\frac{1}{2}\) on end laps. Care must be taken in making laps that rib of top sheet shall not be placed over rib of under sheet.

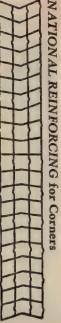


NATIONAL REINFORCING for Corner and Joint Construction

of every type where insulating lumber, plaster boards, wall boards, and wood lath are used as reinforcing all corners and joints of buildings bases are used, is minimized by applying joint reinforcing where all types of wall boards and danger of joint cracks, is specially designed and manufactured insulating lumbers are butted, at window and the plaster base for interior plaster. This style of NATIONAL REINFORCING where such plaster The ior

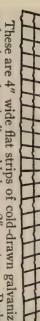


at all external and internal corners. NA corner reinforcing should be used over wood door openings and at any other places subtrowel, and gives proper and economical reinforcing. fast, does not interfere with the plasterer' lath, and all plaster boards and wall boards joints is kind to the workman's hands, goes up jected to severe internal TIONAL REINFORCING for corners and stresses. Likewise



cany-weided on 2" centers; each piece 50" long. leg of each angle is 3" wide. Packed 120 pieces linear feet) to the bundle. Made of cold-drawn, galvanized steel wires electri-cally-welded on 2" centers; each piece 50" long. Each

NATIONAL REINFORCING for Joints

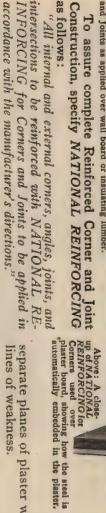


steel wires electrically-welded on 20 pieces (500 linear feet) to the bundle. These are 4" wide flat strips of cold-drawn galvanized and wires electrically-welded on 2" centers. Packed reinforced corner centers. Packed



or metal lath be used for the plaster as it is apmatically embedded This wire reinforcing mesh, due to the 3/16" angles and frames, and across all butted joints. nailed in and around all welded, drawn, and joint construction a reinforcing corners and intervals, becomes auto-(non-rusting) coldnetwork of that only wide mesh wire plied. urring crimps at regular It is steel mesh electricallygalvanized important

lines of weakness. separate planes of plaster will be set up, forming two oints, otherwise



as follows:

NATIONAL REINFORCING Styles C-214, C-216, AA-1414, and AA-1616

These styles of NATIONAL REINFORCING are used to reinforce plaster and stucco wherever the additional qualities furnished by the backing of STEELTEX are not required. C-214 (for exterior) has a %" furring crimp and C-216 (for interior) has a %" furring crimp, for self-furring, enabling the galwanized steel reinforcing mesh to become automatically embedded in the plastic material. This method of reinforcing prevents or cracks, strengthens the structure on and assures better construction. C-214 (2x2 galvanized mesh—14 gauge wire crimped) is applied to the construction of the constr

wire) are manufactured for the same purposes but must depend upon a furring nail for proper furring (see illustration at right). Special galvanized nails are furnished with each roll of C-214 only. STEELTEX furring nails are recommended for application of AA-1414 and AA-1616. All four styles are furnished in rolls of Square yards, measuring exterior stucco, C-216 (2x2 galvanized mesh—16 gauge wire crimped) is used in a similar manner over wall board or insulating lumber for interior plaster construction. AA-1414 (2x2 galvanized mesh—14 gauge wire) and AA-1616 (2x2 galvanized mesh—16 gauge wire) are manufactured for the



Continued on next page

NATIONAL BUILDERS CATALOG

overlapped at all joints so that it forms

in the scratch coat.

ly embedding them

the wires complete-

The wire fabric

under and around

backing, plied against wet mortar is

it flows

STEELTEX for Stucco

0

(

2"x2" galvanized welded wire fabric attached to a double layer, waterproof membrane backing. The reinforcing element of STEELTEX and hold the wet mortar, gives to the stucco slab in addition to providing a suitable base to receive forcing it just as all well designed concrete slabs are reinforced). The membrane backing adds tensile strength to the stucco slab (rein-STEELTEX for Stucco is composed of a





(

(

qualities.

Above: Analytical illustration of a built-up wall section in which STEELTEX is used as the stucco base.

DESCRIPTION OF ABOVE SECTION: 1. Waterproof backing. 2. Waterproof compound, 3. Second tough backing. 4. Furring device. 5. Rust-proofed steel reinforcing fabric. A Scratch coat of stucco. B. Straightening coat. C. Finishing coat.

against this backing and held in place by it until the Functions of Backing—The membrane backing is composed of two layers of heavy, water-resistant backing cemented together with a waterproof mastic The illustration above shows how STEELTEX for Stucco is cut to ength and nailed completely about the building, one width above the other n shingle fashion. Window and door openings are cut away after the STEELTEX has been nailed. The cut out pieces are handily used in table work, etc. stresses without cracking (the square rigidly welded mesh gives equal strength in all directions) and add-ing structural value to the framework about which it to the stucco strength to resist ordinary strains and is wrapped. continuous network about the building, imparting

Short Specifications

stucco has set around the reinforcing wires. Thus the back of the stucco slab is completely sealed against the penetration of dampness and insulated against heat and cold,—the entire building is blanketed against The few directions necessary are printed on each sheet of STEELTEX and every few feet along the roll. For new construction it is nailed either direct to study or over

insulating lumber. For overdiagonal strips, sheathing or

coating (modernizing) old structures see page 175. packing between joints are 1 reinforcing lapped at wire, no

stitch wires which are crimped to permit the

wire 3%".

mesh to fall away from the backing a distance of The STEELTEX furring nail, used

applying STEELTEX

tor

Stucco,

sures this 3/8" fur-

ing steel network

ring of the reinforc-

away from

backing.

As

the the Steel Fabric Reinforcement—The galvanized wire network extends across the face of STEELTEX for Stucco. It is secured to the backing by means of

air infiltration and moisture penetration.

Carry rolls Break joints. around all coNail over every
hard horizontally studs, placing special STEELTEX furand every across the building and every six inches vertically on the or sheets

sheet material by toerial before nailinghorizontal wires. ring nails under the nailing on each stud. -stretch roll mate-Stretch fabric taut



STEELTEX for Stucco comes in rolls 108' by 50" (50 square yards).

of 50 4' by

square 125'.

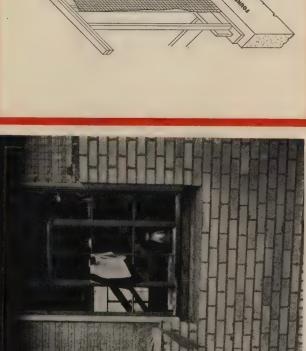
= STEEL

k or Stone Veneer STEELTEX for Bric

system of building a brick or stone veneer wall may be more accurately termed Reinforced Brick Construction or Reinforced Stone Construction. It does not involve a single change in building methods and is no more costly than the less satisfactory methods usually wall ties, the brick or stone are actually built into employed. In place of the usual method of tying a reinforced cement slab and the whole is securely attached to and greatly strengthens the framethe brick or stone to the framework by means of The STEELTEX work.



up the 1" space between the brick and the STEELTEX. The mortar flows around the reinforcing wires of STEELTEX, thoroughly bonding to them and to the brick or stone. The bonding to them and to the brick or stone. The result is a monolithic wall of brick or stone and The STEELTEX is wrapped about the building in place of sheathing lapping one width above another, shingle fashion. As each course of brick or stone is laid, the mortar is spaded steel-reinforced cement, thoroughly sealed at the studs against moisture penetration and infiltration in behind with the bricklayer's trowel to fill of air by the STEELTEX membrane backing.



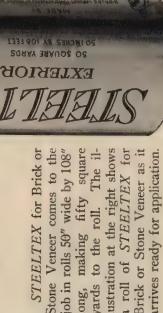
The illustration above shows a typical application of STEELTEX used in brick veneer construction. Note how the mortar is spaded in behind the brick, filling up the 1" space between the brick and the STEELTEX.



Above: STEELTEX Stone Veneer house under construction

STEELTEX used in stone facing is built right into stone and steel-reinforced cement, effectively sealing and the cement slab forming a monolithic (one-piece) wall of weatherproofing the entire house against dampness, heat, and cold.

STEELTEX for Stucco (see page 173) except that the reinforcing wires are 16 gauge instead of 14 gauge. Just as in STEELTEX for Stucco STEELTEX for Stone or Brick Veneer is exactly like to a membrane backing made he wire network is secured up of two layers of heavy water-resistant backing cenented together with a waterproof mastic or compound.



to the roll.

vards ong,

1 roll of

fifty square roll. The il-Stone Veneer comes to the job in rolls 50" wide by 108" STEELTEX for Brick or making

STEELTEX

STEELTEX for Stucco Used for Overcoating (Modernizing)

For Home Modernizing, STEELTEX for Stucco applied directly over the old exterior provides a quick and economical method of increasing the value, attractiveness, comfort and life of old houses. (See illustrations below.)



The home illustrated above was chosen to show the simplest type of modernizing-overcoating. It was unsightly in appearance and had completely outlived its usefulness. The thrifty owner decided to modernize by overcoating the exterior. Stucco reinforced with STEELTEX was chosen for this purpose. (See below.) home illustrated



house being "overcoated." STEELTEX was applied el reinforcement for stucco, STEELTEX was simply siding and stuccoed, (See below.) and sti



The final result—a brand new exterior—done by the combined application STEELTEX and stucco at very little expense. In this way, a hard-to-rent, e-family house was remodeled into a two-family, attractive, rent-producing

"overcoating" or modernizing work. The STEELTEX is applied right over the old exterior and stuccoed. By this simple and inexbility and economy is admirably suited to pensive operation the real estate value may be increased, the valuable life of the old house extended, the home made modern in appear-STEELTEX for Stucco because of its flexiance and comfort, mortgage financing protected and the house made salable or given higher rental

STEELTEX for Stucco used for remodeling terior whether clapboards, siding or shingles, and then the cement stucco is applied as shown below. The application of *STEELTEX* and stucco is simply and quickly done. (For specifications see page 173.) modernizing is nailed directly over the old exand



A close-up view showing how the exterior is blanketed and beautified by the use of STEELTEX and Stucco applied directly over the old clapbords. This easy method of home modernizing gives new values to old homes.

directly profitable investment than to put money in It is quite probable that no owner of an old house can find anywhere in his business contacts a more of course, many degrees of modernizing. Houses which are very old may need an entire program. Many may be satisinside but unattractive outside, a condition readily remedied by intelligent overcoating with rein-There are, the modernizing of his home. forced stucco. factory

is applied direct to the old exterior and stuccoed. The house is automatically blanketed against heat, cold and dampness by the double waterproof backing of of cement stucco correctly reinforced with a continuous network of galvanized steel wires buried in the heart of the stucco. STEELTEX for Stucco and Overcoating page 173) is well suited to this type of work. and a permanent "overcoat", STEELTEX

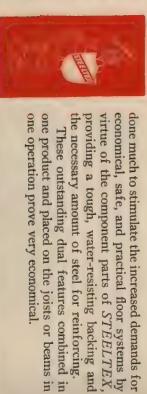
Ribbed STEELTEX for Plaster may be applied directly over the old plaster ceilings and new plaster applied. This eliminates the dust and dirt inconvenience that occurs when the old plaster must be removed. STEELTEX is also used for concrete floors, as a base for cement backup for tile in kitchen, bath, etc. Write for complete booklet 'New Values for Old Houses.'

STEELTEX Floor Lath

during the past few years since this system has roofs in combination with steel joists and light ties, economy, and speed in erection.

STEELTEX Floor Lath has been scientifically weight beams has enjoyed a remarkable increase proved its structural value, fire resisting quali-The use of concrete and gypsum for floors and

developed for this class of construction and has



These outstanding dual features combined

STEELTEX is unrolled over the joists and cut to length; it is then attached to an end or anchored joist, drawn taut by the stretching device at the opposite end joist, and fastened by clips or wedges to intermediate joists.



The illustration above shows STEEL-TEX in an unbroken stretch of 212'—Douglas County Home, Omaha, Nebraska.

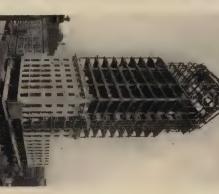




Concrete is poured at a rapid rate directly STEELTEX. The heavy corded backing as against loss of concrete through dropping and mits alabs of designed strength. The galva wire reinforcing mesh is automatically embedd the slab as the concrete is poured.

STEELTEX Floor Lath is manufactured and shipped in rolls 125' long and 4' wide (500 square feet), which length and then cut. op flanges or chords to the desired permits its being rolled out across the

and making end laps at least 1 foot dipanel by clips or wedges and then pulled taut by means of the STEELTEX stretcher. This process is repeated until the whole panel has been covered, lapping the sides of the STEELTEX at least 2" able saving. this class of construction), when concrete tendency for excessive sag (which someis being poured, thus effecting considertimes occurs with other products used on This method of installation reduces the rectly over the nearest intermediate joist It is fastened to one end of the bay or



Continuous Reinforcing

in the tie wire which holds the reinforcis automatically embedded in the concrete sq. in. of steel area per foot of slab width, welded at the intersection, ized cold drawn steel wires, electrically 3"x4" mesh with No. 12 gauge galvandue to the pre-determined depth of crimp The reinforcing element of STEELfloor lath, which consists of a giving .035

tribution of loads. with STEELTEX floor lath because of and contractors who have had experience able comment by engineers, ing to the backing.
This feature has received much favorthe continuity of steel permitting a disarchitects,



Minished concrete floor slab—ready for wood flooring which is nailed to

NATIONAL BUILDERS CATALOG



View looking up at the underside of a poured STEELTEX floor panel.

Continued on next page

NATIONAL BUILDERS CATALOG

leum applied over the concrete slab.

inforced Concrete Slab

STEELTEX Flo

STEELTEX Corded Backing

galvanized)

STEELT EX Floor Lath

reinforcing element, permits the pouring of a on which to pour thin concrete and gypsum floors rary forming and supports and, together with the and roofs. Its solid backing eliminates any temporior dual features (combined reinforcing and form) is recognized as the outstanding product STEELTEX Floor Lath, by virtue of its supe-

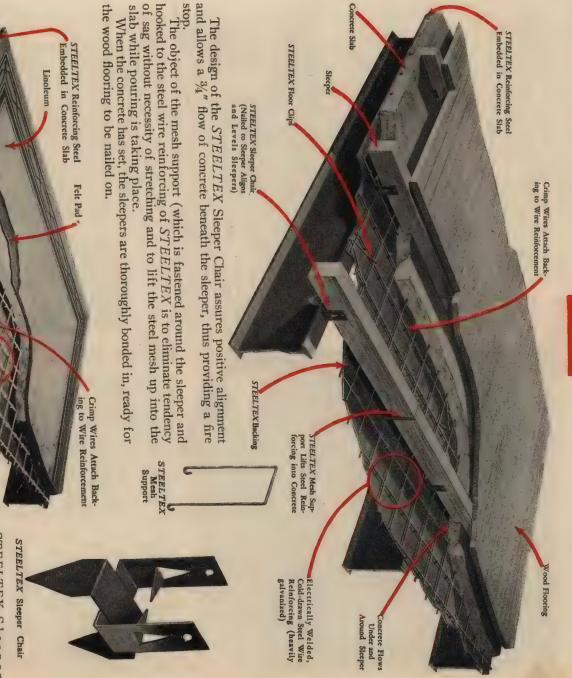
slab of pre-determined strength. When a wood floor is desired over concrete it



is advantageous to use the complete STEELTEX Floor System which comprises (1) STEELTEX Floor Lath, (2) STEELTEX Sleeper Chairs, and (3) STEELTEX Mesh Supports.

STEELTEX Floor Lath is placed over the

and aligned by setting them in the sleeper chairs. 16" on center, the sleepers then properly leveled sleeper chairs are placed on each steel member light weight steel beams or steel joists, then the



sleeper chairs and mesh supports are not required. The above illustration shows lino-When any other floor finish is desired such as Terazzo, tile, linoleum, etc., sleepers, Electrically Welded, Cold-drawn Steel Wire Reinforcing (heavily The pointed ends of the STEELTEX Sleeper Chair puncture the STEELTEX Chairs are easily and quickly placed in position. The Sleeper rests on the Chairs place so that the concrete flows under and around it. and is held and nailed in hold the Sleeper Chairs seagainst the under side of the beam top flange, these ends packing. When pressed back STEELTEX Sleeper

curely in place.

Continued on next page

(Welded Wire Fabric) NATIONAL REINFORCING

NATIONAL REINFORCING (electrically-welded, cold-drawn, wire reinforcing mesh) used for reinforcing roads, streets, sidewalks, driveways, runways, buildings, floors, roofs, canals, concrete pipe, gunite, and all other types of concrete construction.

General Information

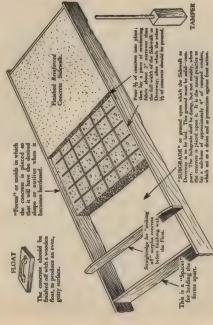
slabs intact, concrete requires reinforcement. NATIONAL REINFORCING is specially de-To resist strains, prevent cracking and hold the signed for reinforcing all types of construction. slabs

welded wire fabric furnished in various gauges and spacings of wires. The material is fabricated by specifically designed machines which accurately space and assemble NATIONAL REINFORCING is an electricallythe wires into fabric form by electrically welding all



Good sidewalks, driveways and roads help sell houses and help sell lots. The slight extra cost of NATIONAL RELINFORCING over unreinforced concrete is a low rate to pay for insurance against trouble. As little as \$5 or \$10 will protect and reinforce the concrete around an average home.

tions. The steel wire, of which NATIONAL REIN-FORCING is made, has high tensile strength, together with elastic and ductile properties of such a character as to render it especially suitable for the reinforcement of longitudinal and transverse members at their intersecconcrete



The illustration above shows the method of laying reinforced concrete ewalks and driveways with the use of NATIONAL REINFORCING.

NATIONAL BUILDERS CATALOG

How to Specify

made it possible to quickly select the proper style NATIONAL REINFORCING (welded wire FORCING should designate the spacing and Welded wire fabric is no longer considered as merely steel reinforcement. The specification of Exhaustive tests and experience gained from thousands of jobs under all conditions, have fabric) is an assurance of exact cross sectional areas of steel with all members accurately spaced. tion of a definite style of NATIONAL REINof NATIONAL REINFORCING.

gauge for both the longitudinal and transverse members. The NATIONAL STEEL FABRIC COMPANY will recommend the style or styles of NATIONAL REINFORC-ING required and will furnish complete information.

or ground upon which the SUBGRADE concrete floor National Steel Fabric Reinforcement in place on top of the first 4" of Concrete. is placed. GROUND Concrete Celler Floor 5" Thick. Finished Reinforced WALL nould be broad and flat.) FOOTING

Above: Method of laying reinforced concrete floor in cellar, garage, or any place where foundation walls are used. Indicating arrow shows how NATIONAL REINFORCING is laid in the concrete slab.

NATIONAL REINFORCING

in stock by building supply dealers everywhere. CC-1010 is a 6 inch square mesh of 10 gauge wires in both directions. CC-66 is also a 6 inch square The standard styles of NATIONAL REINFORCING used for sidewalk reinforcing (CC-1010) and driveways, garage floors, etc. (CC-66), are carried mesh but with 6 gauge wires in both directions as the style number indicates.



Above: NATIONAL REINFORCING sheets.

NATIONAL BUILDERS CATALOG Continued on next page

= NATIONAL REINFORCING ==

NATIONAL REINFORCING For Building Construction

various gauges and spacings for reinforcing concrete. It is furnished in plain or galvanized finish standard sizes and is readily adaptable to practi-NATIONAL REINFORCING (electrically-welded, cold-drawn, steel wire mesh) is made in NATIONAL REINFORCING is carried in stock in many cally all types of building construction. shipped in rolls or sheets.



For Temperature Reinforcement

FORCING adds strength, promotes long service, sively for temperature reinforcement in the top or finish layer of cement or composition floors in office and other buildings. NATIONAL REINprevents cracks, and spalling which in ordinary non-reinforced floors, result in costly repairing or NATIONAL REINFORCING is used extenresurfacing.





For Floor Slabs

slab construction by insuring correct spacing of steel NATIONAL REINFORCING provides superior reinforcing efficiency when used in reinforced concrete floor ING to meet the requirements of the various types of members and proper distribution throughout the slab. There are standard styles of NATIONAL REINFORCfloor slab construction.

NATIONAL REINFORCING is Electrically Welded at All Intersections



CROSS SECTION OF WELD, which photographically illustrates the "fusing" together of longitudinal and transverse members of NATIONAL REINFORCING.

For Cellars and Garage Floors

concrete is setting, preventing the spread of cracks which would ordinarily greatly harm the floor. NATIONAL REINFORCING reduces the tendency of the floor to crete, resists the internal stresses caused when the wet NATIONAL REINFORCING embedded in the concrack and break.

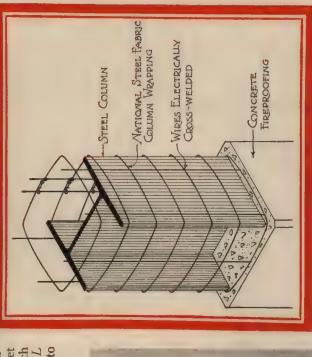


American Furniture Mart, Chicago, III. 240,000 square feet of NA-TIONAL REINFORCING used in this large building.

Typical illustration showing NATIONAL R wire fabric) in place, ready for concrete pouring.

For Beams and Columns

NATIONAL REINFORCING in the proper styles is readily adapted to thin layers of concrete and to the shapes and extensive areas of such work. (See illustration above.)



For Gunite

forcing value in all directions required for the lining of reservoirs, canals, swimming pools, or the protection of exposed steel bridge members. Welded steel fabric should NATIONAL REINFORCING gives the equal reinbe specified as the reinforcing material for gunite work

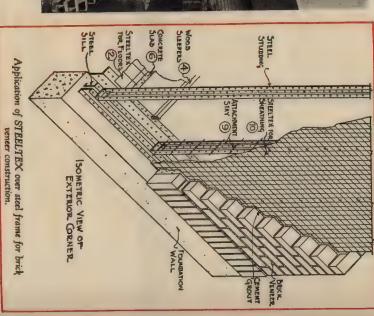
STEELTEX Applied to Mac-Mar Steel Frame House Construction

For Plaster, Brick or Stone Veneer, for

steel frame construction. The application and attachment of STEELTEX is extremely simple. The STEELTEX attachment stay because of its high, protective and lasting qualities, fits in with the scheme and plan of provides an efficient and economical method for interior plaster, stucco, brick or stone veneer or for floors and roofs. STEELTEX ally accepted as the correct material for steel rame house construction, whether it is used Stucco, for Floors and Koors
STEELTEX in its various styles is generfor Floors and Roofs

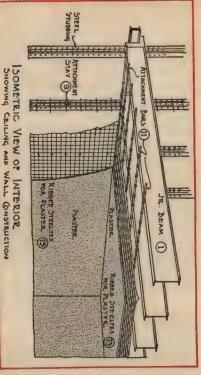


tures as insulation, sound-deadening and damp-proofing in addition to correctly reinforcing the plastic materials with galvanized steel wire mesh. STEELTEX on both the steel framing and affords such desirable fea-—for Stucco—for Brick or Stone Veneer—for Floors—are scientifically and practically suited to steel frame house construction. STEEL-TEX in its four styles is easily attached to the inside and outside of the steel framing probottle in principle. duces a wall very similar to that of a thermos All four styles of STEELTEX-for Plaster

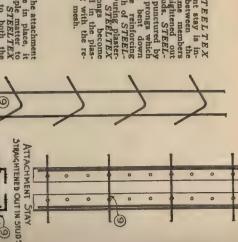


Above: Steel frame house under construction at Lanaster, Pa. The three styles of STEELTEX were used—for plaster, for floors and for brick veneer. At right: Interior view of a steel frame house showing Ribbed STEEL-TEX lath applied over steel framing as a base for interior plaster.

TEX attachment bar is used under the steel joists. The STEELTEX for floor method of construction is employed over the joists. STEELTEX lath for floors is fully described on pages 176–177. STEELTEX in itself is rust-proofed steel, plus the heavy fibrous backwith the added advantages of reinforcing, insulation, of attaching STEELTEX to both inside and outside tion method. For ceiling attachment, the STEELwalls. The details on this page illustrate the construcsound-deadening and damp-proofing. and gives enduring strength and permanency



The illustration above shows the application and attachment of Ribbed STEELTEX lath for interior plaster. Note the STEELTEX attachment stays used for attaching STEELTEX to the sidewalls and the STEELTEX Attachment Bars applied under the steel joists to hold the Ribbed STEELTEX lath at the ceiling.



After the attachn The STEELTEX tachment stay is in then bent do prongs become ded in the plate ong with the ring mesh. ISOMETRIC VIEW

IST. OPERATION

NATIONAL BUILDERS CATALOG

Manufactured by CONGOLEUM-NAIRN INC. IM FLOORS

GENERAL OFFICE: KEARNY, N. J.

CHICAGO, ILL. BOSTON, MASS..... NEW YORK, N. Y..... PHILADELPHIA, PA.....1421 Chestnut Street and Hennepin Avenue. ...14 East Jackson Boulevard20 Providence Street ...295 Fifth Avenue BRANCH OF KDNPASA

ANGAS CITY. MO.	FTROIT, MICH 10 Fast 17th Street	EW ORLEANS, LA	ITTSBURGH, PA 150 Baronne Street	TLANTA, GA	IN FRANCISCO, CAL 57 Forsyth Street, N. W.	ALLAS, TEXAS 180 New Montgomery Street	FICES 1200 Southwestern Life Building
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Products

Sealex Linoleum: Battleship; Plain; Jaspé; Straight-Line Inlaid; Embossed; Karnean Marble Inlaid; Moulded Inlaid. SEALEX TREADLITE Tile (cork-composition): Plain and Marble-ized

Special Advantages of Sealex Materials

smooth-surfaced floor-coverings in the world. Its products office buildings, stores, churches, schools and hospitals. enormous quantities in homes, apartment houses, hotels, are regarded as the finest of their kind and are used in Congoleum-Nairn Inc. is the largest manufacturer of There are the Karnean Marbled Inlaids—which provide "diamond," "checker-board" and other patterns in marble colorings and effects of great beauty and richness. The

sharply contrasted colors and many smart modern effects. Straight-Line Inlaids - which offer designs in crisp,

And the Moulded Inlaids-mellow-toned goods in tile

and carpet effects.

raised tiles with depressed "mortar lines" between them.

exclusive patented process

great variety of designs and weights. There are

Sealex Inlaid Linoleums are available in a

in distinctive and realistic tile patterns made by the Straight-Line Embossed Inlaids--which come

which provides

Colors and Weights

experts. The effect of the Sealex Process is to penetrate Sealex Process, developed and perfected by our technical leum floorings. Exclusive developments in manufacturing Sealex practical qualities never before possessed by linothe tiny, dirt-absorbing pores of the goods, giving to cleaning, and unusual resilience and durability processes have resulted in perfection of finish, ease-of-Sealex materials take their name from the exclusive

hot fats, fruit juices, ink or ammonia can be easily relinoleum. Greases and liquids cannot penetrate them. Even polishing. Painting and varnishing are never necessary. lustre is desired this is attained by occasional waxing and moved without leaving damaging spots. If a rich sheen and Dirt cannot grind into Sealex floors as into ordinary

are not the only advantages of Sealex floors. no suggestion of glossy slipperiness. longer, too, and their colors have depth and softness with Easier cleaning and lower maintenance costs, however They wear



"Castilian," No. 2601. In this and other patterns of Sealex Embossed Inlaid Linoleum, each tile is slightly raised above the "mortar line"—giving an interesting texture effect.

light gray, dark gray, rose-glow, apple-green, lake-blue. -last three colors also in "B" Gauge (3.00 mm.). reights: 3/16 in. (4.80 mm.) and "A" Gauge (3.60 mm.) Sealex Jaspé Linoleum comes in brown, tan, green,

Medium (3/16 in.); Light (3.60 mm.). It is stocked in fication. It is made in three weights: Heavy (6 mm.); resilient floor, manufactured to conform strictly to the igid requirements of the U.S. Government Master Spec-Sealex Battleship Linoleum is a "heavy-duty"

as our Sealex Battleship, but is made in lighter weights: "B" Gauge (3 mm.); "C" Gauge (2.40 mm.); "D" Gauge (2.00 mm.); "E" Gauge (1.70 mm.). Colors: brown, mahogany, green, light gray, black, terra cotta. brown, mahogany, terra cotta, gray and green, Sealex Plain Linoleum is exactly the same in quality

The "Foyer" pattern, Scalex Linoleum No. 3104, combines Blue Belge and Italian white marbled block effects, a dignified floor adapted to a great variety of uses.

marble-ized effects and is laid tile-by-tile in patterns material is particularly suited for the construction of uncially designed for the interior in which it is installed. This flooring, which comes in a variety of plain colors and usual and elaborate floors for public buildings, etc. A full 1/4 inch in thickness, it is extraordinarily durable. Sealex Treadlite Tile is a resilient, cork-composition = SEALEX LINOLEUM ==

"Bermuda"—Sealex Linoleum No.,3038

"Leonardo"—Sealex Linoleum No. 3225







"Deanville"—Sealex Linoleum No. 3041

"Onyx".—Sealex Linoleum No. 3102

"Algiers"—Sealex Linoleum No. 6233





"Thebes"—Sealex Embossed Linoleum No. 3516



"Maydell"—Sealex Embossed Linoleum No. 2906

"Trinidad"—Sealex Embossed Linoleum No. 2901

"Malverne"—Sealex Embossed Linoleum No. 2905





"-Sealex Linoleum No. 2951

O F

TYPES

NEW



"Velmar"—Sealex Linoleum No. 2956



"Crusader"—Sealex Linoleum

"Patio"—Sealex Linoleum No. 7281

"Elysee"—Sealex Linoleum No. 7263



"Westminster" - Sealex Embossed Linoleum No. 3521



"Riviera"—Sealex Linoleum No. 2953

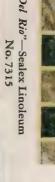
"Castle"—Sealex Embossed Linoleum No. 3534



"Sierra"—Sealex Embossed Linoleum No. 3504

"Sicilian"—Sealex Embossed Linoleum No. 3513



















Mahogany











Ivory White

Light Green

Yellow

Orange



Ancient Galley

Compass

DESIGNED-TO-ORDER

Owl and Pussy Cat

Caduceus

A distinctive floor of Sealex Linoleum in entrance hall, dining room, children's room, or sun porch will add greatly to the salability of any house. Congoleum-Nairn's ready-cut borders (see opposite page), Linsignia service, and nation-wide distribution through competent linoleum contractors, are all part of a particularly convenient service for building contractors who are interested in installing floors in made-to-order effects. There is now a growing tendency on the part of architects and decorators to de-

SEALEX FLOORS AND SEALEX "LINSIGNIA"

Any one of the four "Linsignia" reproduced above will be quickly made up in any combination of the solid colors shown on this page. We ship the material for Linsignia ready-cut to install in a floor of Sealex Linoleum. Or if you prefer to submit your own design, we will cut it out as you direct. Prices on application. sign original patterns for entire floors in linoleum. Old-fashioned Colonial plank floors are successfully reproduced by using Sealex Jaspé Linoleum. Intricate modernistic designs can be worked out in the many different colors of Sealex

Linoleum.

For full details of this service or for the names of linoleum contractors who can serve you satisfactorily, write our Architectural Service Bureau.

Continued on next

= SEALEX LINOLEUM =



"Sudan"—Sealex Linoleum No. 7311



Sealex Moulded Inlaid Linoleum No. 4247



Sealex Moulded Inlaid Linoleum No. 4228



Black Border



SEALEX BORDERS AND BORDER STRIPS

Ready-cut borders of Sealex Linoleum are available in various colors and widths—from 12 inches down to 36 of an inch wide. With this assortment, many interesting border effects can be built up quickly, accurately, and at low cost. Two of many possible border "assemblies" are shown above.







Gray Border Strip



Ó

Red Bord er Strip

ler Strip

Blue Bord

er Strip



Border

Sealex Jaspé Linoleum, Lake-Blue



Sealex Jaspé Linoleum, Apple-Green

Book of Home Interiors

showing various rooms in the home with suggested floor designs. It contains many color illustrations and ideas on planning "Color and Charm in Home Interiors" is a practical book on home decoration rooms.

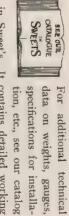
of which can be reproduced on these two pages. It shows where these patterns can patterns in Sealex Linoleum, only a few be used to best advantage and explains It also contains illustrations of many

why certain designs are more appropriate for specific floor areas than others.

This book is sold to home-owners at

tural Edition—with supplementary technical data and other information of interest—will be sent free to architects and 25 cents per copy, but tural Edition—with contractors. to home-owners at the special Architec-

Bureau for copies of printed pieces mentioned here. Address our Architectural Service



drawings, together with complete specifiin Sweet's. It contains detailed working cations covering every type of cork-comtion, etc., see our catalog

printed in Sweet's Architectural Catalog Reprints of this technical information as will be supplied upon request.

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Properties

crack, chip or splinter. They provide a smooth, sanitary, non-slippery surface which is as practical as it is colorful and attractive looking. With Sealex floors, hard, backprovide insulation against sound, heat and cold, are quiet and comfortable underfoot—never These resilient floorings will not breaking scrubbing becomes a thing of the past. Powerful expensive cleaning agents are not chilly, damp or drafty. Sealex Linoleums

is simply a matter of the needed. A push-broom or mop in locations where traffic has been does for ordinary cleaning—and a damp cloth removes all trace of "accidents." As for wearing qual-Our heavier linoleums, installed ities, the durability of a Sealex the material used thickness of floor



hard and constant, are still on the job in good condition after many years of service.

Where Used

few years, still more noteworthy and interesting is the In recent years, many modern apartment houses and private homes have been use of linoleum and its related products within the last by manufacturing im-Remarkable as has been the tremendously equipped throughout with resilient floors. diversity of uses made possible provements and developments.

floor, any design—tile, brick, plank, mosaic, floral, modernistic, etc.—may be chosen. And the decorative possibilities patterns and colors that it is a simple matter to select a material which is nicely suited to the purpose, scale and such a profusion of patterns and colors that any type of of any of these materials may be enhanced by the use of Sealex Linoleums are available in such a wide range of decorative scheme of any interior. Sealex Linoleums offer Sealex Borders of different but harmonious colors.

sive. And economies due to long life, easy cleaning and low maintenance costs bring floor-expense to a definitely Floors of Sealex Battleship Linoleum are probably the cheapest good floor money can buy. And the great variety bled, Embossed, and Moulded Inlaid Linoleum provide The first cost of Sealex Linoleum floors is not excescompetitive basis if figured on cost-per-year-of-service. and attractiveness of the patterns available in Sealex Marfloor beauty of an unusual order—most economically,

How to Obtain Sealex Linoleum Floorings

furniture stores, rug and carpet houses, department stores Sealex Linoleums are sold by leading floor-covering and Most dealers who carry linoleum have competent laying departlinoleum and flooring contractors throughout the country. ments which will bid on furnishing and laying

We shall be glad to give you names of well-qualified firms near you who will install Sealex materials. "Bonded

and Sealex Tile backed by a Guaranty Bond, are offered only through Authorized Contractors of Bonded Floors. Floors," which are floors of Sealex Linoleum See next paragraph.

NATIONAL BUILDERS CATALOG

Bonded Floors Installation Service

forward procedure. Sealex materials are installed by Authorized Contractors of Bonded Floors, located in the principal cities in the United States, who have been selected and endorsed by Congoleum-Nairn for their integrity, experience and ability. The services of this national and building contractors everywhere. This service covers all types of Sealex materials and combines the highest organization of flooring specialists is available to architects tallation and proper materials are equally essential to the lurability of all resilient floors. Both are assured when sealex materials are installed by Bonded Floors Authorrades of materials, skillful workmanship and expert suervision. It has been conclusively proved that proper in-The purchase of a Bonded Floor is a simple, straightzed Contractors.

The Guaranty Bond

y our Authorized Contractors in accordance with our specifications, the finished floor is bonded, as a unit, gainst repair expense resulting from defects in either naterials or workmanship. This bond is concrete evilence of moral and financial responsibility. No more tan-Sealex Linoleums are strictly first-quality materials and Sack" Guaranty. When you have Sealex floorings laid are sold under a broad "Satisfaction or Your Money

companies in the country—the the oldest and soundest surety als used and the conditions under gible and specific pledge of quality could well be provided. It is a legal document, issued by one of United States Fidelity & Guaranty Company of Baltimore, Md. Bonds run 1, 3 and 5 years, depending upon the type of materi-

they are practically sure to become apparent. Needless sible concern, sure of its materials and installation methods. Our Guaranty Bond not only insures freedom which they are installed. In no case do they indicate, or even approach, the life-expectancy of the floor—but they do cover that vital period during which, if defects exist, o say, such a Guaranty can be offered only by a responcaution has been taken to avoid defects in the Bonded from repair expense, but proves that every possible pre-Floor on which it is issued.



The striated, two-tone graining of Scalex Jaspé Linoleum is highly appropriate for bedrooms.

W. & J. SLOANE LINOLEUM Made by W. & J. SLOANE MFG. CO

SOLE SELLING AGENTS: W. & J. SLOANE, FRENTON, N. J.

SAN FRANCISCO, CALIF.
LOS ANGELES, CALIF.
PORTLAND, ORE.
SEATTLE, WASH. SALES OFFICES AND WAREHOUSES 577 Fifth Ave., New York ST. LOUIS, Mo. CHICAGO, ILL. DALLAS, TEXAS DENVER, COLO.

BALTIMORE, MD. BOSTON, MASS. PHILADELPHIA, PA. DETROIT, MICH.

Linoleum Sloane are

harmony with walls and *Cincinnati, Ohio *Houston, Texas *Kansas City, Mo. *Warehouses Only

ly styled linoleum to blend your own home, and to give help on your home Your W. & J. Sloane dealer will be glad to show you patterns of this smartcurtains and upholstery, with the furnishings furnishings plan. How To Get The Best Decorative Effects With Linoleum

choosing linoleums for a paper it is better to select except in a hall, where an welcoming good cheer is Choice of pattern is im-Do not select a ally best in a bedroom, as it is the most restful. In room with a figured wall a plain color or a quiet effect of brightness and obtained by a patterned large pattern for a small room, or vice versa. A plain linoleum is generduo-effect for the floorportant.

With plain walls, or an "oatmeal" paper choose a marked design for the floor. Patterned floors are always best in a dining room, where they are pleasant and colorful, and do not show soil. floor.

They are always best in kitchen, bathroom and sunparlor, for the same rea-Whether plain or patterned linoleum

is used, the effect is generally enhanced with black borders used with patterned linoleums. The width of the border depends somewhat on the size of the Fully competent advice on this by using a border, preferably plain. Unusually smart effects are obtained room.



W. & J. Sloane Clearline Inlaid Linoleum Pattern No. 1280 is used for this charming bedroom. a place in the decorative scheme of your home.

if you want style-if you

If you want comfort-

to keep clean and inex-

pensive to maintain.

then linoleum must have

color harmony-

want

Bathroom, kitchen, Where To Use Linoleum

ful, appropriate-add prestige to the use of linoleum hall-linoleum has long proven its place in the service rooms of the house. Now, new patterns-bright, colornot only in these rooms, but in the living room, dining pantry, breakfast nook, sunparlor, laundry, playroom room and bedroom as well.

patterns by Designed in harmonious and colorful is proving its smartness and beauty in real artists, W. & J. Sloane Linoleum every room in the house. The cry of all interior decorators is for harmony in every element in the room. Dark brown floors do not belong with light grey walls, or cream walls, or any but walls of panelled wood, any more than varnished yellow oak blends with gay wallpaper designs. So now we have modern floors of artistically designed inoleums, linoleums that make a color



Pattern No. 145

Felt-Base

of Felt-Base Rugs, known lightful variety of stylish as Felt-Base. Two grades priced floor material known ous linoleums, W. in all room sizes in a de-"Standard" Rugs are made as the "Aristocrat" Sloane also make a lower In addition to these variand

Sloane Patterns

Hoor coverings. ity and style of all types of for leadership in the qual-W. & J. Sloane has stood For 87 years the house of

ing interiors. colorings offers full opporwide range of designs and Sloane designers. authoritative creations of the line of W. & J. Sloane tunity for achieving charm-Linoleum are all original, The patterns included in Their

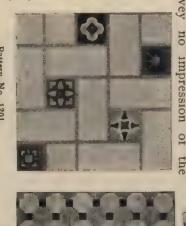
A few examples, in black

colorings. and white, are shown on this page. Neither they nor justice since they convey the accompanying photographs, no impression of the however, do them

quest. any contractor on rewill, however, be sent to Sloane patterns, in color, A full selection of

Where to Buy W. & J. Sloane Linoleum

stores, furniture stores and linoleum contractors by leading department leum is sold and laid



Pattern No. 1201

throughout the country. Any Sloane dealer is pre-W. & J. Sloane Lino-

> Special Service for Builders mating yardage required choice of patterns, estipared to assist builders or timates of cost, etc. from plans, supplying escontractors at any time in

sist builders and contracservice department to asgrades, or to answer any age required to recommate from plans the yardthis department to esti-Avenue, New York City. W. & J. Sloane, 577 Fifth Dept., Linoleum Division special inquiries. mend suitable patterns or to Home Builders Service We maintain a special You can call upon Write

Ask For Any of These Service Booklets

upon request: lowing will be sent to you Any or all of the fol-

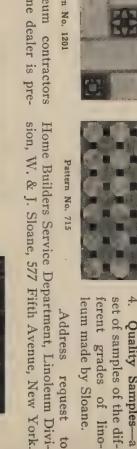
Sloane line in color. ing all patterns in the 1. Pattern Book, show-

Sloane. Modern Floors

patterns in Printed Linobooklet showing latest 3. Colorful Floors-a leum and Felt-Base.

leum made by Sloane. ferent grades of linoset of samples of the dif-Quality Samples—a

Home Builders Service Department, Linoleum Divi-Address request





NATIONAL BUILDERS CATALOG

Pattern No. 3005



Pattern No. 125

THE CURTIS COMPANIES SERVICE BUREAU CURTIS CHEN UNITS

390 Curtis Building, CLINTON, IOWA

For Branch Offices and Display Rooms; For Curtis Architectural Woodwork, see page 150

Follow Your Own Ideas in Kitchen Design

With Curtis Sectional Kitchen Cabinet Units



This kitchen, which is made up of individual Curtis units, shows the flexibility of the line. Any space can be filled. Note the unit which "turns a corner"—an exclusive Curtis arrangement. There is continuous sanitary toe space beneath all Curtis kitchen cabinets.

A New Idea

fies kitchen planning. ractor and builder has a service to offer which greatly simpliany woman may design her own model kitchen; and the contional kitchen cabinet units for homes and apartments. New additions to the line of Curtis Woodwork include

them as in the sketch shown, you'll place doors, windows, stove, To enable the home owner, or builder, to follow his very own ideas in the arrangement of the kitchen all Curtis Kitchen Units in all sizes are reproduced in miniature ready for yo to assemble in any arrangement your fancy pleases before units are delivered right way to design a kitchen? Most people think it is. single step is taken in actual building or remodeling. have available. and refrigerator t just the storage and utility units you desire and arrange after your own ideas, considering, of course, the space have available. Isn't that simple? And isn't it the only These you

very reasonable cost of a Curtis-equipped kit-chen you will know that dreams do come can use in planning your "dream kitchen." When you know the kitchen set which you work dealer before you decide on your kitchen. one else's color choice. not have to take somepaint or stain them any he white so you can See the Curtis Wooda miniature You do

has

color desired.

With this Curtis utility unit it is simple to pick out just the knile or or spoon you're looking for, when the lery drawer tilts forward so obligingly, sugar and flour bins also tip downs making re-filling simpler.

You Can Design Your Own Model Kitchen

Your Curtis dealer has this miniature kitchen set and with it you can design your own kitchen. First, he'll help you place doors, windows, sink and the like in their relative positions. Then he'll plan drawer sections, storage units, closet space and so on . . . just the very time and step savers you've always wanted . . . arranged just as you've always wanted them.

Extreme Flexibility

dential work—either single houses or developments—apartment houses, country clubs, hotels and restaurants, lodge buildings, schools and churches which include kitchens— Curtis sectional kitchen cabinet units offer an entirely new idea for designing kitchens of beauty and of maximum con-The flexibility of Curtis kitchen units is unlimited. For resi-

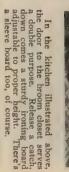
Easy to Install

Curtis kitchen units go together easily and quickly. feature lowers installation costs. All units are made of shipped in cartons, set up, unfinished, and without hard-All units are made of pine;

the finest obtainable and is of solid brass with genuine chromium finish, which is non-tarnishalnon-tarnishable. Hardware Exclusive E/0 Stanley-made available for

Free Planning Service

ice has aided thousands to obtain just the kitcheare invited to send us a plan of the kitchen, showing all dimensions—walls, height of ceiling, location of doors, bring to your kitchen just the utility and beauty you are cost a layout showing the arrangement of Curtis Units which we believe will best 10 windows, sink, stove, and the like. We will send you at no Those building new homes modernizing old kitchens



CEALED BEDS HOLMES CON

Distributed by CONCEALED BED CORPORATION

Street, CHICAGO, ILL. 58 East Washington

Holmes Disappearing Bed Co., and Marshall & Stearns Co. Representatives in all Principal Cities Exclusive Sales Agents for

Product

HOLMES CONCEALED BEDS

General Features

Require Least Closet Space—Holmes Beds require less space than any other disappearing beds. This is important as a matter of only a few inches often necessitates changes in the entire plans.

Size and Style for Every Need—Holmes Beds are made in "twins," single, three-quarter and full sizes. All use standard sizes of doors and require minimum closet space. Any combination of concealment can be used—French doors, flush doors, panels, bookcases, cabinets, etc., to open into dressing rooms or storage closets. All sizes and styles carried in stock for immediate shipment.

Most Beautiful Beds Made—Holmes Beds rival the beauty the most costly furniture. Standard models include all-steel of the most costly furniture. Standard models include all-steel beds in American Walnut or Mahogany grained and varnish finish, as well as attractive enameled steel beds with wood ends in walnut or mahogany, period designs. The use of period design wood head and foot ends marks a new day of beauty in built-in furniture.

possible for foot legs to collapse. Holmes roller beds have patented automatic safety lock which positively prevents "jack-knifing." Holmes Beds use full Double Deck coil or box springs. Holmes coil springs have coils of 11½ gauge wire, making the most comfortable concealed bed on the Safety Features—Full Double Deck Coil Springs—All olmes Beds have automatic foot leg control rod. It is imssible for foot legs to collapse. Holmes roller beds have wire, making the most comfortable concealed bed market. Springs extend full length and width of bed.

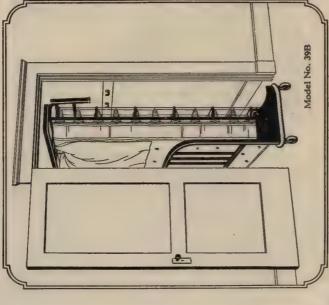
Non-Slip Mattress Clamp—The Holmes Clamp is the easiest to operate. It is a solid casting, holding the bedding and pillows firmly in position, yet requires only a slight pressure to operate it.

Bumpers and Rollers—No metal, not even a rivet head, is exposed to contact on Holmes Roller Beds. It absolutely prevents damage to furniture and woodwork. Holmes uses solid maple casters fitted with one set of roller bearings and two sets of thrust ball bearings. They will not mar floors or rugs.

Booklets and Diagrams

Reference booklets are yours for the asking, showing all features of Holmes Concealed Beds, diagrams of closet space and plans of homes, apartments and hotels in which Holmes Beds are used.





(Model 39B) The Original Roller Bed Roller

This type of Holmes Concealed Bed can be kept in any part of the home—in a closet—in a corner hidden by draperies—in a nother room—or in the hall. It is a full size standard bed including all of the regular Holmes features. Made with square tubing and cane panels or wood ends. Standard finishes are American Walnut and Mahogany.

Closet space required for straight run-in. Depth 5 ft.; minimum door width 2 ft. 2 in.; Height of opening 6 ft. 8 in.; or 7 ft. Fits other sizes and shapes of closets.

A New Type of Concealed Bed (No 63)

Possessing Unique Advantages—The use of this bed gives an entirely new flexibility to the arrangement of closets for concealed beds, making it most desirable for small apartment or residential use where closet space is limited and rooms are small.

The architect is greatly assisted in planning the bed-closet arrangement because of the flexibility of this new pivot bed and the small amount of space required, as it operates in a recess type closet having an opening 5' wide and a depth of 18" from inside of doors to baseboard.

This bed can be lowered as an ordinary recess bed, as a roll-out recess bed with the head end entirely out of the closet, or it can pivot either to the right or left almost parallel with the side wall and can be lowered in any position between these points. The pivot feature makes possible a much wider range in the planning of floor space and facilitates placing of furniture.

HOLMES CONCEALED BEDS

Holmes Two-Door Pivot Bed (Model No. 45)

The Last Word in Comfort and Simplicity The NEW Holmes Piv-A-Dor Bed

Remarkably Efficient Construction—Note how the one-piece foot control rod quickly and positively operates the foot end as the bed is lowered into sleeping position. See those malleable mattress clamps which hold all bedding securely—altogether impossible for the bedding to slip when the bed is up-ended. The Holms Piv-A-Dor is so constructed that the most casual observer is quickly convinced of its easy operation.

One-Piece Head—a Big Feature—A very important feature of the New Holmes Piv-A-Dor Bed is the one-piece head construction. It eliminates considerable mechanism and greatly improves the appearance of the bed. Women appreciate this type of construction not only for its appearance, but because of its complete safety.

Other important structural advantages are the special 11/2 inch square seamless welded tubing used in head and foot end, and rectangular fillers 1/2" x 11/2". Sleeping length of this bed is 6/2" or 6/4" as desired.

Both closet doors are always closed. Hinged doors can be opened or closed, when bed is in sleeping position, allowing free access to closet; when closed prevents any draft on sleeper. It may be installed either with or without the steel standard bar, eliminating all strain on door. When steel standard bar is used it carries the weight of the bed and door, permitting the use of French or mirrored doors, and making a perfect installation from a practical and engineering standpoint. Doors of any angles are end across door where y cannot be n. Doors 134 hes thick are n required. If ot bed withthen required. If pivot bed without steel standard bar is used, two 2 ft. 6 in.
doors may be used for full size bed. thickness can be used. If steel standard bar is inches thick ed, specially steel angles fastened they Model No. 45

A—Door Opening 3'0" x 6'8" or 7'0". The Holmes Piv. A-Dor Twin Beds. No. 55 requires 2— 2'4" doors, pockets 1'7", depth 2'7".

feature of all Holmes Pivot Beds is that they are easily adjusted without removing bed from opening, thus avoiding extra expense if building settles. When bed is open all four legs rest firmly on the floor—another Holmes exclusive feature.

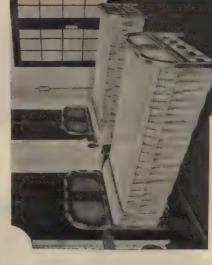
Closet space required on full size bed: Depth 24 in. inside of door to plaster (in clear); opening height 6 ft. 8 in. or 7 ft., using two 2 ft. 8 in. doors.

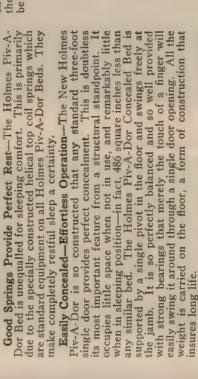
Holmes Twin Pivot Beds (9 ft. Opening) Model No. 45-Full Cane Ends

This twin bed installation illustrates the beautiful

effects that can be secured by using Holmes Concealed Beds. These beds are equipped with a full coil spring and use the steel standard which carries the combined weight of door and bed. The center panel or door serves as the access door, and as will be noted from the cut, all doors may be closed when the beds are in use, in this manner eliminating all draft over the beds, as well as the unsightly appearance of an open dressing room. Mirrored doors may be used if they are preferred, in fact, any type of door or panel. If panels are wanted, they can be carried out with similar effect of wall paneling. With this installation, regardless of the position of the beds, access to bath or dressing room may be had at ALL TIMES.

Illustrating the Holmes Piv-A-Dor Bed No. 55 swinging out of the closet thru a single door on two pivoting arms. The lower arm rests solidly on the floor and carries the full weight of the Bed.





Many Attractive Designs—This new model Holmes Bed is available in a variety of attractive designs for head and foot ends, including color schemes harmonious with room furnishings. Makes a really handsome addition to any room.

Let Holmes engineers give you the entire story of this new addition to the complete Holmes Concealed Bed line. Regardless of your construction problems, they can help you find the most profitable solution.

NATIONAL BUILDERS CATALOG

Continued on next page

RECEIVADOR AUTOMATIC RECEPTACLES

74-78 Ionia Avenue, N. W., GRAND RAPIDS, MICH. Made by RECEIVADOR SALES CO.

RECEIVADOR





No. 21 Receivador Jr. Fits between studding 16" o. c.

An Automatic Servant Which Receives and Stores Packages Safely.

pants of the house. ing and storing them in its dust and vermin-proof comnewspaper, laundry, grocery and all other deliveries, lockand inside door, it receives the daily milk and cream, of deliveries. Built in door or wall, with both an outside twenty-four hours a day for the receipt and safe storage partment against the time of their removal by the occu-Receivador is an automatic mechanical servant on duty



Method of Operation and of Safeguarding Deliveries

door closed by delivery man, the Receivador Following a delivery, and with the outside

turn of the outer locking knob outer door becomes locked, and the inner door lock released, permitting the housewrite's removal of the parcels delivered. alternating interlock comes into play. At the

matically; and it remains locked until opened from within the next delivery man. At the same time the inside door, and the inside door closed and locked, the outside door the house. engaged by a turn of knob with the interlock, locks autoautomatically becomes unlocked, ready to be opened by After the delivery has been removed from Receivador

this unique alternating interlock feature which constitutes ceiver to use. the brains of the Receivador. It is the best package realways locked, warding against intrusion and theft. It is Consequently one of the two Receivador doors remains

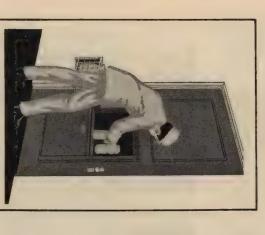
Types and Sizes

and double compartment units, and these permit addition of other units, vertically or horizontally. Receivadors are obtainable in single compartment units

di.

Receivador Jr.

measurably more refined, high-grade and durable in every to be obtainable at no greater cost than a through-the-wall way. It fits between studding 16" o. c. moderate-price residence or apartment. So low in price as Receivador Jr. has been designed especially for the

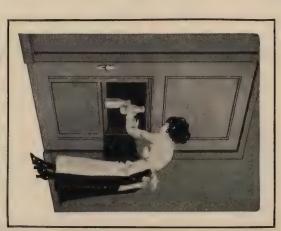


Receivador receives and automatically pro-tects deliveries. It saves the deliveryman's time as well.

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Double Receivador Cabinet, showing one compartment in use.



Double Receivador Cabinet Installed in Wood Door, Receivador Cabinets do not interfere with storm or screen doors.

RICLIYADOR

Receivador protects deliveries until the housewife is ready to remove them,—and is then ready to await and protect the next delivery.

A grained five-coat finish to match any natural wood can also be had at nominal extra cost.

CASE

CASE

KITCHEN

Receivador comes with screw holes ready in the cabinet for securing to entrance door or to frame in wall.

Any carpenter can erect Receivador in place. If in a door, it is merely necessary to remove the panel or cut the proper opening if door is unpaneled. If in a wall, Receivador needs only to be framed in like a window. The installation plans shown herewith

offer good suggestions.

In place Receivador adds to rather than detracts from the appearance of door or wall. Light in weight for all its strength, it does not overweight a door when installed therein, nor cause door to bind or sag.

Receivador with Key-Lock

A flawless kitchen arrangement with suggestive use of Receivador (a) in door, or (b) set in wall over refrigerator.

For apartment buildings which receive all deliveries from tradesmen and in turn re-deliver to tenants' individual apartments we furnish Receivadors with specially designed key-lock. The key lock on each Receivador in the building then takes but the one key,-in possession of the management and operated by the management only.

Construction and Finish

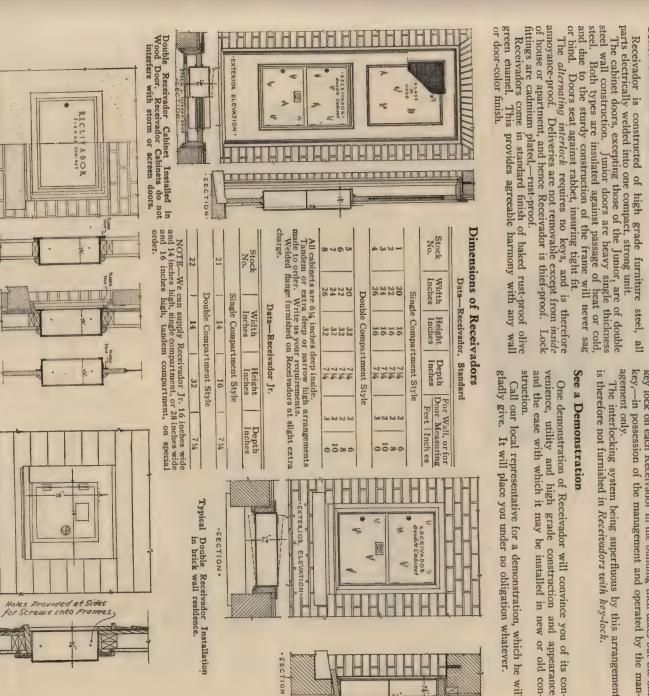
The interlocking system being superfluous by this arrangement is therefore not furnished in *Receivadors with key-lock*.

See a Demonstration

venience, utility and high grade construction and and the ease with which it may be installed in new One demonstration of Receivador will convince you of its con-enience, utility and high grade construction and appearance, or old con-

gladly give. It will place you under no obligation whatever. struction.

Call our local representative for a demonstration, which he will call our local representative for a demonstration whatever.



Continued on next page

NATIONAL BUILDERS CATALOG

Receivedors are also available with a flange trim of furniture cally welded in place. Flange is centered for door installation.

re steel, electri-lation, or flush

SINGLE INSTALLATION SECTION Receivedor Jr. Installation in Wall.

EXTERIOR ELEVATION

FLAT DRAWN LUSTRAGLASS

Made by AMERICAN WINDOW GLASS CO

PITTSBURGH, PA.

SALES OFFICES

Boston, Mass. New Orleans, La. San Francisco, Cal. SEATTLE, WASH.
LOS ANGELES, CAL.
CHICAGO, ILL.
ATLANTA, GA.

NEW YORK, N. Y. ST. LOUIS, MO. PORTLAND, ORE.

FACTORIES

HARTFORD CITY, IND.
MONONGAHELA CITY, PA.
KANE, PA.

USTRAGLASS GLASS, 16 OZ. PICTURE GLASS,
PHOTOGRAPHIC DRY PLATE GLASS, ¾6"
and ¾2" CRYSTAL SHEET, BULB EDGE
GLASS, GROUND and CHIPPED GLASS, LUSTRAGLASS FLAT DRAWN SHEET INDOW GLASS, ARMOR-LITE WINDOW GLASS, ARMOR-LITE SCATTER-PROOF and BULLET-PROOF PICTURE

TINTAGLASS and IMPROVED QUARTZ-LITE. Window Glass

This wonderful new glass, in our standard single strength thickness, not only transmits 15 to 20%* of the shorter ultra-violet rays at 313 mu., but it is a Window Glass now manufactured by this company is trade named Lustraglass. The New Flat Drawn Clear

better, brighter, clearer, perfectly flat glass at no greater cost than ordinary window glass. The greenish cast, characteristic of window glass, has been almost entirely eliminated. It can be glazed with either side out.

Crystal Sheet Window Glass

All window glass manufactured by this company, heavier than single or double strength, such as 26 oz., 29 oz., 34 oz., and 39 oz., or 3/16" and 7/32" glass is known to the trade and sold as Crystal Sheet.

Crystal Sheet glass possesses a brilliant surface, is of uniform thickness and approximates the flatness of plate glass. It is an acceptable substitute for a great many uses and is lower in price than polished plate. Being a lighter product than plate glass, its use assures a considerable saving in the cost of sash

Armor-Lite Scatter-Proof Glass

ARMOR-LITE is a clear, flat, high lustre product. It is available in a wide range of weights, sizes and thicknesses for automobile equipment and replacements, as well as heavy Bullet-proof for banks and Feather-weight, designed especially for the aviation

Tintaglass industry.

A scatter-proof laminated glass product furnished in a variety of beautiful colors for decorative purposes—wall tile, table and dresser tops, shelving, display cases,

Picture Glass

leading producer in this country of 16 oz. picture glass in selected and superfine qualities. This product is generally recognized as the finest picture glass The American Window Glass Company is the in the world

Photo Glass

This company manufactures photo glass for camera use, lantern slides and glass for diagnostic X-Ray plates.

NATIONAL BUILDERS CATALOG

We are also manufacturers of ground and chipped glass in plain and Ground Glass and Chipped Glass fancy designs. ARNOLD, PA. JEANNETTE, PA. BELLE VERNON, PA.

Suggested Specifications

be Lustraglass, a product of American Window Glass Co., and shall be (here specify the thickness and quality of glass desired). The Lustraglass All window glass used in this building shall label must appear on each light, All "AA" and "A" quality Lustraglass will be identified as such on the label.

If the American Window Glass Company's glass is specified, the company will follow up the installation whenever requested, without expense to the party requesting this service and report whether the glass furnished is the kind, quality and thickness specified,

Grades and Qualities

"AA" indicates the best quality of window glass. "A" indicates the next best grade and "B" the next quality. Grade "B" is suitable for basement and attic windows, but only grades "A" or "AA" should be used for glazing the windows of the principal rooms of a dwelling.

Thickness and Weight

Single Strength window glass ranges from 10½ to 12 lights to the inch and weighs 18½ ounces per square foot. Double Strength glass ranges from 8 to 9 lights to the inch and weighs 24½ ounces per square foot. Glass thicker than Single Strength or Double Strength is known as "Heavy Sheet Glass" and is designated by weight in ounces per square foot.

26-oz. Glass, range 7½ to 8 lights to the inch 39-oz. Glass, range 6½ to 7 lights to the inch 39-oz. Glass, range 5 to 5½ lights to the inch (A sheet of 39-oz. Glass is about 3¼C" thick.)

45-oz. Glass, range about 4½ lights to the inch (A sheet of 45-oz. Glass is about 7/32" thick.)

The new Lustraglass is obtainable from any of the leading distributors throughout the United States.

Free Booklets

thicknesses at various wave-lengths.

Armor-Lite Booklet—If tests mean anything to you, be sure to see this proof of why Armor-Lite Scatter-proof Glass and Lustraglass Booklet—Send for the Lustraglass Booklet A-430, showing table of ultra-violet transmission of standard

Requests for these booklets and our Complete Window Glass Specifications should be sent to our Home Builders Division, Bullet-proof Glass are superior safety glasses.

Farmers Bank Bldg., Pittsburgh, Pennsylvania.



Identification Labels

Every genuine light of the new Lustraglass is labeled to identify its genuineness. This is for the protection of the purchaser. In the case of "A" and "AA" quality glass the label bears the letters indicating the quality.

*See Lustraglass booklet A-430 for complete table of ansmission for this and other standard thicknesses.

EAGLE PURE WHITE LEAI

Manufactured by THE EAGLE-PICHER LEAD COMPANY

MAIN OFFICES

134 N. La Salle Street, CHICAGO, ILL.

ELEVEN PLANTS—BRANCHES IN ALL PRINCIPAL CITIES

Products

LEAD, ZINC AND ALLIED PRODUCTS.

Eagle Pure White Lead

Paste. They are both the same Old Dutch Process Pure White Lead in two forms: Heavy Paste and the new Soft pure white lead that makes the finest paint. pure lead paint of greatest beauty and Supplied in Two Forms-For producing a Eagle economy, Eagle-Picher offers

Either Soft Paste or Heavy Paste makes a pure lead paint.

any color in a moment. It is used either for plain Endurance-The endurance of pure lead paint is a matter of fact. It is traditional in the painting tory painting. It may be used pure white or tinted profession to use pure lead for long-lasting satisfacfinishes or the most modern multi-colored patterns



Eagle Heavy Paste White Lead

Washable Interior Finishes. For all types of interior work on walls, ceilings, or woodwork where flat, glossless, washable finish is desired (whether plain, tiffany, mottled, etc.) we recommend the Heavy Paste Eagle White Lead in combination with the new Eagle

Flatting Oil. Where semi-flat or eggshell finishes are desired, we recommend the combination of Eagle Soft Paste with Eagle Flatting Oil.

Eagle Flatting Oil

The advantages of Eagle Flatting Oil are many.
It dries to a beautiful, glossless finish, pure white in color, shows no brush marks, is enduring and economical, and easily washed. Makes an excellent bronzing liquid (mixed with a little spar varnish, and either bronze or aluminum powder); also glazding or blending liquid for tiffany effects; and fine undercoating for enamel.



The characteristic black and white Bagle Soft Paste Package

Eagle Soft Paste White Lead

The only difference in the two forms is that Soft Paste has more linseed oil added so that it comes to lead" consistency. It can be sent out on the job unyou already broken up to what painters call "shopopened, quickly thinned to painting consistency, tinted any color in a moment.

Saves Painting Time-This new "Soft Paste" form saves painting time and painters have welcomed it

NATIONAL BUILDERS CATALOG

Eagle Flatting Oil comes in quart and 1 gallon cans and 5 gallon drums, each equipped with easilyopened "Upressit" caps.

Containers

Both Soft Paste and Heavy Paste are supplied in 100, 50, 25 and 121/2 lb. steel containers. Painting Information Free

We will gladly furnish any information that you may desire on any phase of home decoration or modernization where the question of painting enters in. Mixing and tinting instructions will be gladly furnished you or your painter.

BREINIG-BUILT Made by BREINIG BROTHERS, INC VARNISHES, ENAMELS,

Hoboken, N. J.

and PAINTS of the finest grade. A complete line of Varnishes, Enamels

order that the surface may be in proper condition for reand allowance must be made for contraction wear down evenly over a period of years, in and expansion, and the paint must retain its fresh appearance, as long as possible, and Paint is less than 1/300 of an inch thick

painting. In Breinig-Built paint we amply cover these quali-

The different parts, properly compounded, make a fications, and in addition give it most exceptional flowing manner. with necessary dryer, and we treat the oil in a scientific Our paint has more flow than paints made from The vehicle of our paint is pure linseed oil,



thin, it is scientifically "built." perfect whole, and while the film is extremely

and will keep its fresh appearance longer and type, will not retain as much dirt and dust will leave less brush marks than the other left by the brush. Paint with an even flow Paint film breaks first in the tiny crevices

It also has much more gloss which it retains well. as moisture cannot easily penetrate this more even film better protect the wood and metal surfaces,

Costs

obtained. found on the market; in fact quite the reverse is true, ENAMELS and PAINTS than the ordinary finishes to be tor by their use beautiful and lasting effects will be It costs no more to use Breinig Brothers' Varnishes,

COLOR SUGGESTIONS

Homes surrounded by trees and foliage: White, gray or cream; with open surroundings: Green tan, buff, light brown. Use light shades for body colors, heavier colors for trim and small color areas. Light colors make the house appear larger and dark colors make it appear smaller. Confine color combinations to two or three colors. If your house needs more than two colors consult a master painter on the color scheme. browns for body, with harmonious green roof, sash and entrance in a light color. Small house or cottage, use brown with ivory or green trim and green roof. body, white trim, green sash and roof, or use light drab roof, or use French gray body, olive green shutters and roof. pearl gray body, white trim, green blinds and roof. Hipped roof, Colonial house, use white body, green shutters, and red body, ivory trim and green roof. Gable roof house, use soft American suburban style home with pyramid roof, use gray Small house or cottage, use brown

A Few of the Products from the Very Complete Breinig-Built Line

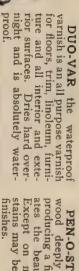
white trim, bronze green blinds, and gray green roof, or use On Colonial houses use white or light cream without contrasting trim. Dutch Colonial, use straw or Colonial yellow,











use has excellent covering quali-ties, flows freely, will not sag and dries free from dust in 6 to 8 hours, and hard in 48 OLD MASTERS' ENAMEL
or either exterior or interior

sheen when viewed from an angle, though its general appearance is flat. Used on plaster, concrete, brick, wallboard, canvas or wood walls and ceilings. WALLSHEEN has a slight

NATIONAL BUILDERS CATALOG

producing a finish that accentuates the beauty of the wood. Except on mahoganies, these stains may be used as one coat finishes. PEN-O-STAINS and penetrate thoroughly,

for repainting work. It pro-duces an extremely durable film having exceptionally long life. makes a permanent foundation PREPARED PAINT has a

LUXITE produces a porce-lain-like enamel finish on inte-rior walls and woodwork. It can be washed without injury to the surface. Luxite is made in flat, eggshell and gloss finish.



BREINIG-BUILT VARNISHES, ENAMELS, PAINTS



Selling Paints

LUMBER DEALERS

SHOULD WELL AS

THEMSELVES

colors and products that is as wide and varied as can over of stock, giving to your customer a selection of business without a heavy investment and a slow turnfound in any of the largest metropolitan centres. Display makes it possible for you to secure a large volume Selling Paints and Varnishes from our Lumber Dealer

tor immediate use. paint, varnish and enamel, the material is not required On the majority of jobs where the lumber dealer sells

all of which require a paint or varnish product for their effect the sale of varnishes, enamels and paints at the same protection. time you are selling your other building materials, most With this complete equipment it is possible for you 0

that any live, progressive lumber dealer, regardless whether he be located on the outskirts of the town or varnishes that is equal to that of any other merchant the centre, can obtain a volume of business in paints and Operating with this cabinet, it has been demonstrated of

town—in many cases greater.
In addition, with this equipment, you are able to show your customer just what the finished job will look like. Paint-both exterior and interior; Shingle Stains, Flat It comprises panels illustrating the colors of Prepared terior purposes as well. for trim; Varnishes-for interior trim, floors and Wall Tints-for interior walls; Enamels and Stains-

Our representative, without any obligation on your

0f selling. Remember, this plan is operating successfully in over 1000 lumber yards located in all sections of the country. of business in paints and varnishes on which the profit part, will be glad to show you how, with a very small is as great or greater, than anything else you are now investment, it is possible for you to secure a large volume

Eight Reasons Why You Should Sell the Finish When You Sell the Building Material

It stimulates the sale of lumber by showing it in its

2 it were worth more than the price instead of less. It takes lumber out of its raw state and makes it look

deserting his customers when they most need his help. 3. It enables the dealer to round out his service instead of

does not know one species from another. 4. It shows the customer how to beautify and protect the wood he buys rather than turning him over to someone who

needed in helping to make sales. It provides lumber offices with a beautiful display of finished--something that is much

6. Directions are given on each panel. There is no guessing as to how to produce the finish. The dealer supplies the proper material for each species. This insures satisfied cus-

a wide range of select bright new packages. Customers prefer this method to any other. selection, high quality products, fresh It provides esh stock and

his responsibility to see that his customers obtain proper The lumber dealer is the man to sell paint. He sells the He makes the two sales and two profits at once.

ERIOR FINISHES INI S'NOSNHOI

JOHNSON & SON Manufactured by S. C.

"The Interior Finishing Authorities"

RACINE, WISCONSIN

ONE OF THESE BRANCHES IS NEAR YOU

Denver, Colo., 1745 Arapahoe St. ATLANTA, GA.,
16 West Peachtree Pl.
Boston, Mass.,
852 Summer St.
CINCINNATI, OHIO,
2259 Gilbert Ave.
CLEVELAND, OHIO,
1645 Superior Ave.

NEW YORK, N. Y., 270-276 Lafayette St. MILWAUKEE, WIS., 936 Third St. Омана, Neв., 1407 Harney St.

DETROIT, MICH., 5432 Grand River Ave.

Kansas Crry, Mo., 2433 McGee Trafficway.

Los Angeles, Calif., 1151 Santee Street

DALLAS, TEXAS, 2824-26 Main St.

PHILADELPHIA, PA., 620 S. Delaware Ave.

The Johnson Household Floor Polisher is the leading machine in this field. It has the lowest price of any.

The Johnson Electric Floor Polishers

PITTSBURGH, PA., 926 Duquesne Way SAN FRANCISCO, CALIF., 56-1216 Locust Street Sr. Lours, Mo., 2116 Locust Street Sr. Paul, Minn., 1930 St. Anthony Ave. SEATTLE, WASH., 314 Bell Street

VARNISHES; JOHNSON'S PERFECTONE UNDER-COAT AND JOHNSON'S WAX POLISH; JOHNSON ELECTRIC FLOOR POLISHER; JOHNSON'S FLOOR LACQUER; JOHNSON'S ENAMELS; JOHNSON'S PERMACOTE FLAT WALL PAINT; JOHNSON'S LIQUID WAX GLAZE FOR TEXTURED WALLS AND WALLPAPER; JOHNSON'S WOOD DYE.

Under-Lac (natural or mahogany); Kleen Floor, for cleaning waxed floors; Powdered Wax for dance Also Electric Solvo, paint and varnish remover; Weighted Polishing Brushes for waxed floors; Floor Mops.

Beauty, Permanence and Economy With Wax

modern homes. No touch of the decorator's hand reuniform sheen he creates upon a floor with Johnson's Wax Polish. The easiest and quickest decorating macal floor finish for the owner, preserving his floors Uncovered floors . . . waxed. That is the vogue in flects so much credit to his ability as the brilliant, terial to apply and polish, it is also the most economiwhile adding the final touch of beauty and good taste in his home.

Speed is substituted for weight. The result is greater mobility even than a vacuum cleaner. Still, it does more work than a much heavier machine running at lower The sturdy Tampico bristle brush spins at 2100

r.p.m., burnishing the wax to a firm and brilliant finish.

speed.



which is widely used in homes, will be found very Johnson Wax Applier and Dry Floor Duster for main-This equipment saver on large jobs

Johnson's Wax Polish

Forty years of constant endeavor have developed in Johnson's Wax the most satisfactory floor wax obtainable. Based on Carnauba wax, it imparts an exquisite luster, is slip-proof, and offers the utmost resistance to wear. It is the ideal polish for furniture, woodwork, and automobiles. It is obtainable in paste or liquid form.

Johnson DeLuxe Electric Floor Polisher with new interchangeable sanding roll. Universal Motor; 110-115 volts, A.C. or D.C.; 2,100 r.p.m.; Tampico bristle cylindrical brush, 4" in diam. by 8" wide. Weight, 13%



The DeLuxe machine for contractors polishes 2000 square feet an hour. It is now supplied with an interchangeable sanding roll, making it the simplest complete floor refinishing and polishing machine.

A new product designed especially to produce the perfect waxed floor job, Johnson's Floor Lacquer

using filler, lacquer, and wax only in place of shellac or varnish. A clear, easy brushing lacquer-thin, tough, and water-proof.

through the use of filler, Johnson's FLOOR LACQUER is For close-grained woods where color isn't obtained made in 4 shades as Johnson's LACQUER STAIN.

Johnson's Varnishes

Johnson's Floor Varnish is literally "made to walk on." Tough, durable, water-proof. Dries hard over-night. May be rubbed and polished.

Johnson's FLAT VARNISH is simply quisite velvety hand-rubbed effect. Mixed Johnson's FLOOR VARNISH with an exwith FLOOR VARNISH in any propor-Can be tion to obtain any desired gloss. used on FLOORS.

Johnson's QUICK DRYING VARNISH speedy drying. Hard in 4 hours under average conditions, yet an easy-work-ing, long-wearing varnish in which quality isn't sacri-FLOOR VARNISH plus is our regular

water, and to alcohol, ammonia, etc. Will stand the and interior use is impervious to hot or cold or soapy severest tests of weather and temperature. Exception-Johnson's SANI-SPAR VARNISH for both exterior ficed for speed.

Universal motor; 110-115 volts, A.C. or D.C.; 2,100 r.p.m.; Tampico bristle cylindrical brush, 4" in diam. by 6" wide. Weight, 11

Johnson New Improved Household Floor Polisher.

ideal all-purpose varnish wherever cost is a factor. Made ohnson's FLOOR and FINISHING VARNISH is the for the professional painter.

Johnson's Interior Trim Varnish is exceptionally full-bodied. Does a beautiful job on standing Saves an extra it economically. trim and does

Johnson's Perfectione Under-Coat and Enamels

Johnson's Perfectone Under-Coat coat that can be made. The perfect foundais the smoothest and best-covering undertion for any enamel job.

Wears like porcelain. The Gloss finish comes in white Johnson's PERFECTONE ENAMEL is a long-oil architectural enamel of the finest grade. Will never check, chip or peel. Guaranteed to stay white.

only, the Satine finish (hand rubbed effect) in white, ivory and gray.

product. It has all the characteristics of the highest grade enamel plus exceptional covering capacity. Made Johnson's GLo-Coar Enamer is a highly specialized to eliminate one coat of under-coat.

Johnson's No. 25 ENAMEL contains more real value JOHNSON'S INTERIOR FINISHES =

than is to be found in any other medium-price enamel

Johnson's Permacote Flat Wall Paint

on the market.

fect flat wall paint. For plaster, wood, metal, burlap, or wall board. Easy working, permitting fast application, Stands repeated washings. As a priming coat on new walls use Permacote and will not show laps or brush marks. Johnson's PERMACOTE is the per-

Permacote may also be used as an inexpensive undercoater for economical with Johnson's Wall Size Varnish. enamel jobs.

Johnson's Liquid Wax Glaze for Textured Walls and Wallpaper

Johnson's Liguid Wax Glaze is a revolution-

oil colors, producing jobs of unique beauty. It is the easiest and quickest yet absolutely permanent in effect. Can ary decorating material for use on textured walls it can be tinted any shade desired with glaze in the world to apply or to change, over sand-finish plaster or any prepared plastic paint. Supplied in natural color, QUID WAX

ing and general deterioration. Keeps patterns and colors Johnson's Liquid Wax Glaze also affords the ideal protection over wallpaper. Prevents tearbright and new. Can be washed with damp cloth. be washed with soap and water.

Johnson's Wood Dyes

Johnson's Wood Dye, oil or spirit, is the world's standard. For 25 years it has tiful colors of this dye penetrate deep into been relied upon by painters and decoparent, containing no pigments, the beauthe wood without raising the grain and rators the world over. Perfectly translast as long as the wood itself. It is easy to use, will not show laps or streaks, and dries quickly.

ordinary fillers. It is made on a base of finest Metronite Quartz from our own mines. It forms an oval pore that will never shrink or crumble. The easiest filler to use and Johnson's Paste Wood Filler differs from all the cheapest filler in the long run.

Wholesale Prices to Painters and

corating contractors because of the volume of materials they use. Write for this price list and complete data Our wholesale price is extended to painting and deon treatment of floors, woodwork, and furniture.



= PAINTS—VARNISHES—MURESCO =

PAINTS-VARNISHES-MURESCO

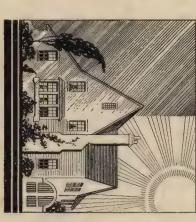
Manufactured by BENJAMIN MOORE & CO

511 Canal St., New York, N. Y.

CHICAGO, ILL. CLEVELAND, OHIO ST. LOUIS, MO. CARTERET, N. J. TORONTO, ONT., CANADA

PAINTS, VARNISHES AND MURESCO

& Co. are considered excellent standards of quality. For 47 years users have purchased them at reasonable prices and with the confidence of satisfactory Products bearing the name Benjamin Moore



For Rain or Shine

for its purpose. special needs. Each product, because of the care governing its manufacture, may be considered the best results. This Line covers every practical, and many

For Exterior Painting

Popular colors, suitable for body, trim and blinds. Your dealer will be glad to show you color samples.

Moore's Porch and Deck Paint is the ideal product prevent checking, cracking or peeling. Its long wearing and satisfactory resistance to the most severe cliwith a good for use on house, barn, garage, tences and other exposed surfaces of wood, brick or metal. It dries hard uct is ready for use. matic conditions are proof of its quality. This prod-Moore's House Paint is a pure Linseed Oil product gloss yet possesses sufficient elasticity to It is made in white and many

excellent service. It is available in six colors. for exposed surfaces subjected to extreme wear and It gives to porch floors and steps and boat

for use on wood shingles, clapboard and exterior Moore's Shingle Stain is a liquid wood preservative Twelve shades

For Interior Painting

colors and white. It produces a beautiful, velvety finish for Walls and Ceilings. It is easy to apply, thoroughly reliable and reasonable in price. Surfaces painted with Sani-Flat are washable. Sani-Flat is a flat oil paint manufactured in twenty

Interior Gloss is an enamel-like paint for walls and woodwork of bath, kitchen, hallway, laundry and all interior surfaces where a durable, high gloss finish is desired. Made in White and seven beautiful tints.

NATIONAL BUILDERS CATALOG

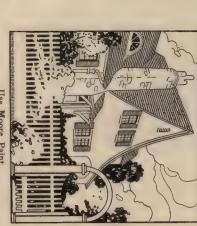
with boiling water. It enjoys the largest sale in the world of products of this kind and is universally recognized by both painter and amateur Muresco is a powder prepared for use by mixing for wall, and particularly ceiling decoration. Muresco is the type of product often desired

as the easiest to apply and most satisfactory wall finish.

colors, also white. By mixing with boiling water, adhesion of the material to the surface which is painted, is assured. Muresco will not crack, chip, peel or rub off. It is superior to kalsomine. Made in eighteen tints and ten

For Sizing and Sealing Porous Surfaces

painting new plaster and old porous surfaces. It neutralizes the injurious action of lime, acid, alkaline Impervo Surfacer overcomes the difficulties met in



Use Moore Paint

wall finish. Equal parts of Impervo Surfacer and spotting and staining of subsequent coats of paint or Sani-Flat can be mixed to form a combination size salts and water. Impervo Surfacer prevents peeling, rill-Coat is a combined filler, size and primer to be

SURFACE Roof

with colors in oil. sizing before the application of paint. May be tinted One coat seals thoroughly, giving a smooth, even impervious film, over which subsequent coats of wall finish or paint may be applied without showing flashes or stains. Wallboards need no additional priming or the surface. Practical, economical and easy to apply thinned by the painter to suit the varying porosity of used on fibrous open pored Wallboards. It is a semi-paste product of such consistency that it may be

For Enamelling

the most enduring resistance to severe weather conditions. On the interior it gives to walls and wood exterior and interior decoration. Long in oil, it offers trim that Mooramel is manufactured in Mooramel is an enamel finish of the highest type for White, also High Gloss Blue, Gray and Ivory porcelain-like finish so often d desired

> Tints. New surfaces to be enamelled are prepared by sanding, and coating in with Moore's Enamel Underucts for Cabinet, Floor and L. Marine Work.

of wood, metal, plaster or wallboard. during application. It will not pick up undercoats. Utilac flows out evenly to a smooth finish. It is manueconomical, easy to brush and has no offensive odor factured in sixteen beautiful colors. Utilac is a four hour drying utility enamel for use furniture, floors and all surfaces or articles metal, plaster or wallboard. It is durable,

For Painting Floors

Utilac Varnish has the durability and fine appearance of a high grade floor varnish, plus a rapid dry.

The LINE of IMPERVO VARNISHES comprises prod-its for Cabinet, Coach, Rubbing, Interior Finish, loor and Linoleum, Exterior Finish, Spar and

Interior Finish, inish, Spar and

It can be used successfully on any interior surface.

For Staining

oak, cherry, walnut or mahogany. This product is a pigment stain, the colors are non-fading and it will grained woods to imitate natural hardwoods such as not raise the grain of the wood. It dries with a flat finish which may be varnished, waxed or shellacked. Oil Wood Stain is intended for use on new closeflat

products cover well, work easily and dry with a durable high gloss finish that may be washed with soap and water. Concrete Floor Paint may be used on

crete floors, and plaster and metal surfaces. hard-drying enamel paints for use on wood and con-

These

Moore's Floor Paint and Concrete Floor Paint are

concrete and cement.

For Varnishing

products are used to meet each particular require-Varnish satisfaction is attained when specific

nite purpose. For each interior or exterior surface there is only one entirely satisfactory product. Im-pervo Varnishes are manufactured with this idea in mind. They will meet the most exacting demands. Moore's Impervo Varnishes are made with a defi-te purpose. For each interior or exterior surface



From Floor to Ceiling

Miscellaneous

Use Moore Paint

For every Paint and Varnish need Benjamin Moore & Co's dealers can supply a product unsurpassed in respect to quality, economy and resultant satisfaction.

In addition to the above products Cement Coating, Liquid and Paste Fillers, Special Trimming Greens, Pure Colors in Oil, Tile-Like Enamel and Color Varnish are well-known, widely used and worthy of your consideration.

The cost of labor is so high that every precaution must be made to select products the equivalent in quality of the money expended in applying them. In Moore's Products you are assured of good covering, durability and high quality.

Specifications for Small House Painting

The following specifications are suggested for a six room and bath, clapboard house with shingle roof, open porch and unattached garage. On the first floor are Living Room, Dining Room and Kitchen. The second floor comprises three Bedrooms and one Bath. Color Cards showing the suggested color schemes, and the names of dealers from whom these products can be purchased will be mailed to you upon request.

BEDROOM No. 4 Muresco Pea Green Sani-Flat Utilac—(Half White) (Half Jade Green) Jade Green Utilac No. 4 Muresco Ecru Sani-Flat Ivory Mooramel Elastic Floor Varnish No. 50 Moss Green Shingle Stain Outside White House Paint No. 34 Chrome Green House Paint DINING ROOM No. 4 Muresco Light Buff Sani-Flat Ivory Mooramel Elastic Floor Varnish BEDROOM No. 12 Muresco Ecru Sani-Flat Ivory Utilac Oak' Utilac INTERIOR EXTERIOR PORCH No. 50 Shingle Stain White House Paint No. 34 House Paint Light Gray Porch and Deck Paint White—Interior Gloss White—Interior Gloss Ught Green Utilac (Linoleum)—Utilac Varnish BEDROOM No. 12 Muresco Pink Sani-Flat Pink Utilac Utilac Varnish GARAGE No. 50 Shingle Stain White House Paint No. 34 House Paint Gray Concrete Floor Paint HALLS No. 12 Muresco Ivory Utilac Ivory Mooramel Elastic Floor Varnish BATH Ivory Utilac Ivory Utilac Utilac—(Half White) (Half Medium Blue)

Specifications for Application of Material

SURFACE Ceiling Walls Woodwork

SURFACE Ceiling Walls Woodwork

SHINGLES—2 coats Shingle Stain; add 1 quart Pure Linseed Oil per gallon to 1st coat.

CLAPBOARD—3 coats; House Paint; add 1 pint Pure Turpentine per gallon to 1st coat.

CEILLINGS—2 coats; Impervo Surfacer (1); Muresco (2).

WALLS—3 coats; equal parts Impervo Surfacer and Sani-Flat (1); Sani-Flat with 1 pint Pure Linseed Oil per gallon added (2); Sani-Flat (3). Utilac of Interior Gloss unthinned in 2nd coat of 2 coat work.

WOODWORK—3 coats; Enamel Underbody thinned with 1 pint Pure Linseed Oil per gallon (1); equal parts Underbody and Mooramel (2); Mooramel (3). Use Utilac unthinned for 2 coat work.

FLOORS—2 coats; add 1 pint Pure Turpentine per gallon to Varnish, Floor Paint, Porch and Deck Paint or Utilac (1); Varnish, Paint or Utilac unthinned (2).

ACCO NO. 8 SASH CHAIN

Made by AMERICAN CHAIN COMPANY, INC.

BRIDGEPORT, CONN.

LIMITED, NIAGARA FALLS, ONT IN CANADA: DOMINION CHAIN CO.,

DISTRICT OFFICES

CHICAGO, ILL. PITTSBURGH, PA.

Boston, Mass.

SAN FRANCISCO, CALIF. NEW YORK, N. Y.

PHILADELPHIA, PA.

Product

Acco SASH CHAIN AND FIXTURES.

American Sash Chain

Chain links are flat, giving a strap-like action which is strong and flexible. It operates freely and noiselessly over the pulley, and General Information-American Sash will not kink.

AMERICAN AMERICAN AMERICAN AMERICAN AMERICAN AMERICAN FOR BUSTONES SEPPLY

Copper-bearing steel is used exclusively for the manufacture of American Sash Chain, assuring life as long as the sash

Acco No. 8 Sash Chain

For Residences and Apartments

Chain for it will not rot or cut on the sharp quickly recognize the advantages of Acco Sash Home owners and prospective home buyers edges of pulleys.

Architects recommend the use of Acco No. 8 not fray, weaken or stretch, and in case of fire it will not burn and allow the windows to drop. Acco No. 8 Sash Chain costs no more per Sash Chain because it wears a lifetime; it can-

window than cord. Because there is no waste, 100 feet of Acco No. 8 Sash Chain will hang seven average windows, as against only five with cord.

Easy to Install—Carpenters prefer Acco. 8 Sash Chain because it is easier to install. No. 8

The coil is simply slipped onto the end link of the chain and inserted in the sash.

There is also a saving in labor as one man can hang four windows with Acco No. 8 Sash Chain in the time it takes to hang three with cord



Illustrating the Advantages of Acco No. 8 Sash Chain over Cord

NATIONAL BUILDERS CATALOG

Operates Perfectly Over Any Cord Pulley

No change is required in pulleys as Acco No. 8 Sash Chain operates freely with mechanical perfection over regular semicircular grooved pulleys.

Finishes-Acco No. 8 Sash Chain is furand hot galvanized. These finishes are apto the chain by special equipment which coats nished in three finishes-coppered, S.R.P.

The S.R.P. finish is a zinc coating having the apeach link thoroughly and evenly. pearance of sherardize.

Standard Fixtures for Acco No. 8 Sash Chain

American Sash Chain Fixtures are quickly and

Coil springs provide a strong grip which cannot easily adjusted. Made in copper finish only. work loose.



hole sash. For two-hole sash the spring coil is placed One attachment takes care of both one and twoin the upper hole of the sash.

Furnished in three sizes: for 34 in.,

They are easy to install Sash weight hooks eliminate cumber-7/8 in., and 1 in. bores. some knots.

and cannot loosen.

Good hardware dealers carry Acco Sash Chain in bags containing 100 feet of sash chain together with necessary attachments.

nished in handy cartons, each carton containing sufficient sash chain and attachments for the average double-Acco No. 8 Sash Chain is also furhung window.

SAMSON SPOT SASH CORL

Made by SAMSON CORDAGE WORKS

89 Broad St., Bosron, Mass.

CORD, CURTAIN and SHADE CORD, MASONS' LINE, ARC LAMP and TROLLEY CORD, SIGNAL CORD, DUMBWAITER ROPE, etc.; also GLAZED facturers of braided cord in all sizes and for all purposes, including Samson CLOTHES LINE, AWNING LINE, VENTILATOR The Samson Cordage Works are manu-SASH CORD and other SASH COTTON TWINE. SPOT



Trade Marks

addition to this trade mark on the labels on each hank, Samson Spot Cord is marked and the Lion is made of extra quality stock, is carefully inspected and guaranteed free from imperfections of braid or finish. In identification after the labels are removed and prevent the substitution of inferior cord. All cord bearing the trade mark of Samson with colored spots which are a means of

Samson Trade Mark

Specifications

Samson Spot Sash Cord

Specifications should read: "Windows to be hung with Samson Spot Cord; size of cord and size of pulleys to agree with manufacturer's list." (See illustrations at bottom of page.) Samson Spot Cord will wear many times longer than metal devices or than the common cord so often found on the market, made of inferior yarn, roughly braided and poorly finished, and often adulterated. Such cord is soon destroyed by abrasion on the pulley.

Sample Cards and Catalogues

Sample cards and catalogues showing the proper sizes with different weights and pulleys and further information will be gladly sent to architects, builders, or anyone interested.

SAMSON SPOT CORD

difference in cost between Spot Cord and ordinary rough cord for a whole house is frequently less than the expense of replacing a single broken cord.

Samson Spot Cord is made in one quality only, the best sash cord we can produce after 46 years experience. The number indicates the diameter in 32ds of an inch.



Size No. 6. Diam. 3/16 in.

About 18 lbs. per doz.; about 66 ft. per lb. Suitable for weights of less than 10 lbs. Minimum diam. of pulley allowable $1\frac{1}{2}$ in.



Size No. 7. Diam. 7/32 in.

About 22 lbs. per doz.; about 55 ft. per lb. Suitable for weights from 10 to 15 lbs. Minimum diam. of pulley allowable 1¾ in.



Size No. 8 Diam. 1/4 in.

About 27 lbs. per doz.; about 44 ft. per lb. Suitable for weights from 15 to 25 lbs. Minimum diam. of pulley allowable 2 in.



Suitable diam. of About 33 lbs. per doz.; about 36 ft. per lb. for weights from 25 to 35 lbs. Minimum pulley allowable 2½ in.



About 44 lbs. per doz.; about 27 ft. per lb. Suitable for weights from 35 to 45 lbs. Minimum diam. of pulley allowable 21/2 in.



About 60 lbs. per doz.; about 20 ft. per lb. Suitable for weights from 45 to 60 lbs. Minimum diam. of pulley allowable 3 in.



Hank Samson Spot Cord

SILVER LAKE SASH CORD

Look for the Name Stamped on Every Foot of Cord

SILVER LAKE COMPANY Manufactured by

GENERAL OFFICES

NEWTONVILLE, MASS

BRANCH OFFICES

New York, N. Y., 76 Reade Street Philadelphia, Pa., 508 Market Street Houston, Texas, Box 1335

CHICAGO, ILL., 20 West Kinzie Street SAN FRANCISCO, CAL., 604 Mission Street SEATTLE, WASHINGTON, L. C. Smith Bldg. Los Angeles, Cal., 506 American Bank Bldg. FACTORIES AT CHATTAHOOCHEE, GA.



SILVER LAKE is a SOLID-BRAIDED WINDOW SASH CORD of unusually substantial wearing quality. This Company also makes Railroad Bell, Trolley, Signal, Curtain and Shade Cord; Arc Lamp, Dumbwaiter and Transmission Rope; Masons' Lines and Clotheslines and various types of Solid-Braided Cordage

Advantages of Solid Braided Cordage

Silver Lake Sash Cord is made of the highest quality selected cotton yarns. It is twice doubled and twisted, then braided on solid-braiding machines especially designed by this Company. It costs less per pound than linen and other fine fibers, and because of its lighter weight, it costs less per foot than cords that are cheaper per pound. A cotton cord is more durable than one made of linen or hemp because cotton is the only fiber that will withstand constant bending over a pulley. The Silver Lake process of finishing takes up all stretch, therefore this cord does not lengthen as it wears. Silver Lake Sash Cord is smooth in finish and cannot work in between pulley wheel and case—which means Fewer Broken y

To Contractors and Builders

The good will of your customers is your best stock in trade. Don't risk it by using a sash cord of less stamina than Silver Lake. The ordinary sash cord begins to go within three to five years. The home owner's confidence goes with it—unless you safeguard it by using Silver Lake, which protects you with a 20-year Written Guarantee. Your selection of Silver Lake Sash Cord also convinces customers that you are "fussy" as to details—a point that is bound to prejudice them strongly in your favor.



Trade Mark

Genuine Silver Lake Cord is stamped with the name "Silver Lake" on every foot. Bulk goods are bound with our label, bearing our trade mark (as shown herewith).

Sizes and Weights

The table below gives the sizes and weights of our cords, specifying weights each size will safely carry.

Sizes, Weights, Lengths, Etc., of "Silver Lake" Cord

300046	Size No.
00 / 00 / 00 / 00 / 00 / 00 / 00 / 00	Diameter, in.
7. 本 W P N m A W T W の	Weight per dozen hanks, lbs.
>>2 4 5 6 0 7 6 4 2 6	Feet per pound, approximate
massass Markara	Minimum diameter, of pulley allowable, in.
10 to 15 10 to 15 15 to 25 25 to 35 35 to 45	Suitable for weights, lbs.

Prices on application.

NATIONAL BUILDERS CATALOG

To Sash and Blind Manufacturers

Sash Cord is one of the most noticeable parts of a sash as it is delivered to a job. The slight extra cost for Silver Lake—the trade-marked cord that shows quality at a glance—will be more than offset by the added selling value. Silver Lake Sash Cord is nationally advertised. You'll find it profitable to have this name associated with your product.

To Architects

When you write "Silver Lake Sash Cord" into your specifications—and see that your specifications are followed—you convince clients that you have their interests at heart. Merely specifying "cotton braided sash cord" is not enough. This term includes many cheaper cords that will not deliver a fraction of the length of service you can depend on with Silver Lake.

To Carpenters

It pays to carry a hank of Silver Lake Sash Cord in your repair kit. Many times when you are called in to do other repair jobs, you'll find a sash cord broken. A suggestion from you is bound to get an order to replace it. And with Silver Lake, you can do the job right. Hardware dealers will supply

Special Cords

This Company will furnish estimates promptly from any sample of Special Cords in all colors, with wire centers, etc. Anything in the line of a solid-braided cord, regardless of color or design, may be had, and we earnestly request you to write us, describing your needs.

Silver Lake Distribution

Silver Lake Cords are in use throughout the world, and carried in stock by leading hardware dealers throughout the United States. Should you be unable to find a Silver Lake distributor in your vicinity, please communicate with the Home Office, or our nearest Branch Office, direct.

Guarantee

The Silver Lake written 20-year Guarantee comes with every hank of genuine Silver Lake Sash Cord. It proves our faith in our product, relieving you of responsibility.

Tests made by the U. S. Government Bureau of Standards show that Silver Lake outwears chains and cheap cords.

110 o o ~ o	Size No.
	Diameter, in.
543228 604	Weight per dozen hanks, lbs.
556 44 207	Feet per pound, approximate
mannam MK KK	Minimum diameter, of pulley allowable, in.
10 to 10 10 to 15 15 to 25 25 to 35 35 to 45 45 and up	Suitable for weights, lbs.

DILLON JAM-PROOF SASH PULLEYS

Made by THE STANLEY WORKS

NEW BRITAIN, CONN.

SALES OFFICES AND WAREHOUSES

PHILADELPHIA, PA., 617 Filbert Street CHICAGO, ILL., 61-67 West Kinzie Street NEW YORK, N. Y., 100 Lafayette Street

San Francisco, Cal., 576 Monadnock Building SEATTLE, WASH., 619 Mutual Life Building Los Angeles, Cal., 1202 Washington Building

Dillon Jam-Proof Sash Pulley

The Dillon Jam-Proof Sash Pulley Made of Stanley Steel Has Many Advantages.

ing fully enclosed. A finished appearance is only possible in the Dillon Jam-Proof pulley.

(2) Cord or chain cannot jump wheel and jam.

(3) Sash weights cannot climb wheel and wedge Improved appearance. Wheel and open-ily enclosed. A finished appearance is

Sash weights cannot climb wheel and wedge

eliminated by enclosed housing (4) Infiltration of drafts and dirt through pulley

use with chain. through pulley. Cord pushes through pulley to pocket without a mouse. A mouse tape will be furnished for (5) Carpenter's time reduced for threading cord

(6) Noiseless operation.





Showing construction journal bearing type 2½ in. size.

ple for template purposes.

Construction Cut-away view showing ball bearings, 21/2 in. size.

Stanley "Coppered" steel used exclusively, assures

long life and dependable operation.

One-piece "watch case" design of housing produces a rigidity of construction impossible in the open or

In this rigid style of housing, extra heavy wheels run freely on improved types of hardened steel double bushings in the journal bearing type, and on double rolls of hardened steel balls on hardened steel race-

The wheels of the 2" pulley are designed for chain of the new small type and cord up to No. 8, and are built to stand up under a destruction test of 850 lbs. The 2½" wheels are designed for both chain and ways in the ball bearing type. The wheels of the 2" pulley sash cord up to No. 10, and will withstand strains up to 1500 lbs. This is a wide margin of safety. Your millwork dealer can supply proper size and type to serve your purpose. millwork dealer can supply proper size and type

attractive bronze colored Baked Oil finish. This is a high-grade protective coating and is applied inside The standard finish on the 2" residential pulley is an attractive bronze colored Baked Oil finish. This is a

> finishes, and in solid brass or bronze. the various brass and cadmium plated The 2" pulleys are also available in

The 21/2"

Heavy Duty

Architects

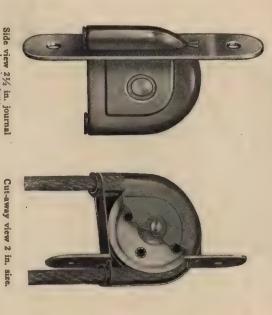
ANLEY

always placed over cadmium as a rust resistant) and also in solid brass or bronze. The Baked Oil finish on request. can also be furnished if desired. Samples readily sent in the various brass plated finishes (brass plating is ings, schools, hospitals, hotels, etc., is furnished Specification pulley, designed for office build-

Standard Specifications for Dillon Jam-Proof Sash Pulleys

All wood frames for double hung sash having pulley stiles not more than 7/8" in thickness are to be equipped with 2" Dillon Jam-Proof Sash Pulleys (specify finish)

All brass plated or special finish pulleys are to be delivered to building site in protective boxes or containers, and are only to be applied to frames at time of hanging sash. Contractor will supply mill with sam-Frames for double hung sash having pulley stiles 1-1/16" or 11/8" in thickness are to be equipped with 21/2" Dillon Jam-Proof Sash Pulleys (specify finish).



Side view 2½ in. journal bearing type.

Drive Type Pulley

The Stanley Works, in addition to the Dillon Jam-Proof Sash Pulley, also manufactures a standard cone bearing, drive type pulley, having a standard cone a 2" diameter

AIL BOXES BUILT-IN M

Made by PENN-GREG MANUFACTURING CO.

809-811 University Ave., St. Paul, MINN.

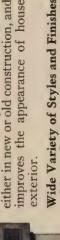
MAILO-Box Built-in Mail Box.

A Built-in Mail Box Ready to Install in Any Kind of Wall

THE ORIGINAL BU valuable, mean too much to the recipient, to run the risk Letters-any kind of mail-are too

of loss or theft through being entrusted to the ordinary receptacle.
The Mallo-Box (built-in mail box) receives letters,

newspapers, magazines, etc., keeping them safe and dry until removed inside by the occupants of the house. It is a complete unit that comes ready for installation in any kind of house wall



particular taste and requirements, and designed also to fit the varying thickness of brick and frame walls. Some of the styles incorporate name Wide Variety of Styles and Finishes Mallo-Box comes in a wide variety of styles and finishes, to meet plate and door push button.

It is also furnished with vertical mail slot for installation in cross wall or end wall in duplex or double Styles A1-A2 Name plate and door-bell attached.

high grade galvanized steel with locked and electrically welded joints. Inside delivery door is birch or oak, natural finish.

-714" wide; 19" long; 314" deep Face Plate Size-7%" by 3%"

Box Size-

	E4	11	1				
Price	4.75	6.50	8.00	6.50	\$8.00	\$ 7.50	40.00
Finish	Brushed Brass	Cast Aluminum with name plate	Solid Cast Yellow Brass in Dull	Choice as above	Either of above two styles may be had with name plate and door bell button at	Solid Cast Bronze in Dull Satin or	As above with name plate and door
Kind of Wall	Frame	Frame	Frame	Brick	f above two styles r	Frame	. Brick
Style	臣2	EA-1 EA-2	EVB-1	EVB-2	Either of bell bu	EB-1	EB-2

All above styles have choice of inside cabinet door in Oak or Birch, natural finish. Solid brass surface hinges with wood knob.

4" Mail Opening—6 12" by 3 14" -77%" wide; 21" long; 3 14" deep For Large Magazines, Newspapers and Letters Face Plate Size—8 14" by 5 14" Box Size—7

Style	Kind of Wall	Finish	Price
BB-1 BB-2 BVB-1 BVB-1	Frame Brick Frame Brick	Dull Satin or Polished Bronze Dull Satin or Polished Bronze Cast Yellow Brass. Cast Yellow Brass.	\$10.00 10.00 10.00 10.00
he two	above styles may be	The two above styles may be had in either dull satin or sand blast finish.	t finish.
BA-1 BA-2	Frame	Dull Aluminum	\$9.00

Ease of Installation

Installation plans below show ease with which the entire unit may be enclosed in either frame or An adjustment MAILO-Box is adjustable to any brick construction. thickness of wall.

ILT-IN MAIL BOX

-BOX

MAILO

For frame or stucco walls Style No. 1 is adjustable from $3\frac{1}{2}$ " to $6\frac{1}{2}$ " wall thickness. slide eliminates any fitting on the job

For brick walls Style No. 2 is adjustable from 91/2" to 13" wall thickness.

nished at the same price as our regular styles. They are adjustable from 14" Telescope Mailo-Boxes can be furstyles. They are ad to 26" wall thickness.

Special Finishes

below we can furnish special finishes to match any outside hardware trim at slight additional cost. Prices quoted on In addition to the stock finishes listed

Shipments

Shipments are made immediately on receipt of order. Special finishes shipped within 24 hours of receipt of order.

Stocked by All Building Material

oss-section of Mailo-ix installation in brick wall, Mailo-Box in ordinary styles and sizes are stocked by building material dealers everywhere. Ask for a demonstration-no obligation.

Boxes with Vertical Mail Slots

Mail Opening-55%" by 2"

Especially suited for installation in a cross wall or end wall in duplex or double house. Receiving door on either right or left side or end opening.

Mail Opening-2" by 814" Price Bright or Dull Bronze.
Bright or Dull Bronze.
Dull Aluminum with door bell button and name plate.
Bright or Dull Bronze with door bell button and name plate. -314" wide; 18" high; 18" deep Finish 'ace Plate Size-35%" by 1098" Frame or Brick Frame or Brick Frame or Brick Kind of Wall Style H-A H-B H-AB

Face Plate Size—10%" by 3%"

Frame or Brick

H-BB

12.00 10.00

	Price	8.00		\$ 7.50 7.50 8.50 8.50
DOX SINC O'N WINE; 24 1011S; 372 UCCP	Finish	Cast Vellow Brass	Above two styles in either dull satin or sanded finish.	Dull Aluminum Dull Aluminum Cast Bronze, dull or polished Cast Bronze, dull or polished
DUA SIMO	Kind of Wall	Frame Brick	Above two styles i	Frame Brick Frame Brick
	Style	K-1 K-2		-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5

Style	Kind of Wall	Finish
G-1	Frame	Cast Aluminum, dull
G-2	Brick	Cast Aluminum, dull
A-1	Frame	Cast Bronze, dull or polished
A-2	Brick	Cast Bronze, dull or polished

9 8888

CASEMENT HARDWARE

Made by THE CASEMENT HARDWARE CO.

406 N. Wood St., CHICAGO, ILL.

Casement Hardware Headquarters Since 1906

Products

OPERATING and LOCKING DEVICES spewood, including THROUGH-SCREEN and CON-CEALED CASEMENT OPERATORS, STAYS, OPERATOR and SCREEN UNITS, CLEANING cialized for Casement Windows-steel UNITS, and SCREEN HINGES, etc. ERATOR

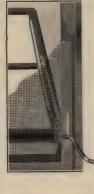
Casement Hardware

Oin-Dor

Advantages-Win-Dor Hardware is a complete line of specialized units for casement window operation and control affording Security, Convenience and Durability.

Service—A special department is available for advice on casement screening and operating problems.

Win-Dor Series 26 Gear Type Operator



ning installation of Win-Dor Gear Type Operators.



Operation-Works through the screen. Any type screen. Casement is open or closed with four turns of inside screen can be used; wood, metal or rolling Window is automatically locked in any open or closed position. of the handle.

to fit either wood or steel outswung casements. Finish—Rust-proof finishes or all standard hardand silent in operation due to bronze bearings. Made Construction-Beautiful in appearance.

ware finishes on solid brass.

Win-Dor Series 45 Top Closer



automatic. Strong enough to overcome warping. Has a pull of ten pounds. Right or left hand installation. Operation-Mechanically simple and completely No mortising.

Construction—Entire closer is contained in a neat, smoothly finished metal housing size 31/2x11/2x1

Finish-Rust-proof cadmium or parkerized, or solid

NATIONAL BUILDERS CATALOG

Win-Dor Series 70 Cleaning Hinges

Particularly useful for single casements not otherwise accessible for washing from outside. When window is opened full, there Operation—Gives to wood casements the same type of projected swing that is general practice with standard steel casements.

is four inches between sash and window frame.



Construction—Strong attachment is provided for window frame and wide bearing surface on sash. Loose brass pin. Finish—All steel parkerized or solid brass.

Win-Dor Series 80 Casement Operator and Screen Unit



conwith security and venience. Easy operation



Operation—Smooth, easy crank handle control with operator concealed. Sash is automatically and positively locked in any position. Window operation from shut to open position is accomplished without moving screen. Screen attachment and removal are simple and easy.

Construction—Consists of Win-Dor Series 26 Gear Type Operator concealed by neat metal stool cover. High grade flat type metal screen with No. 16 mesh bronze wire. Cover is made of 16 gauge deep drawn

copper steel.

Finish—All steel parts rust-proofed by means of parkerizing.

McCABE DOOR HANGERS

Made by THE McCABE HANGER MFG. CO.

425-427 West 25th St., NEW YORK CITY

to assist builders with advice based on our long experience. Put your sliding or folding door problems up to us and we will show you how to get the best results with least labor. This company makes Ball Bearing Door HANGERS, Track and HARDWARE for all types of Sliding and Folding Doors, Overhead Carrying Devices, Expansion Bolts, Ball Bearing Wheels and Rolling Ladders. We have specialized in ins this line of work for 30 years and have developed hangers to meet every possible condition, many of them possessing unique and useful features not found in any other hanger. We are always glad to assist builders with advice based on our long experience. Put

Sliding Doors for Homes

adjustments, one raising and lowering the track and the other permitting the door itself to be raised or lowered. In designing this equipment careful attention has been paid to accessibility. You will find McCabe Hangers the easiest to install and easy to adjust, should settling of the building make adjustment nec-The McCabe Double Sliding Door Equipment and method of installing is illustrated on the opposite page. Similar equipment can be furnished for single doors. Note particularly the two

Best Materials Used

Our house door hanger is made of 13-gauge steel, the heaviest gauge used in any house door hanger. Carriages have steel frames and double ball-bearing wheels. All parts are case hardened and carriages are furnished with hard, fibre wheels, insuring long life and quiet operation. Header plates, door plates, stops and guides are of malleable steel. Tracks are self-clearing. Noth-

ing better made, yet the price is but little more than the cheapest hanger on the market. Remember that your principal cost in door hanging is labor and do not economize on material. You save money on McCabe Hangers because they are designed and made to insure quick and satisfactory installation.

Accordion, or Folding, Door Hanger

This equipment enables you to combine living room and dining room in one spacious room, yet provides for a folding partition between the two when desired. Gives your houses a unique feature that appeals to many home builders. Write for illustrated catalog and installation diagrams.

Receding Closet Door Hardware

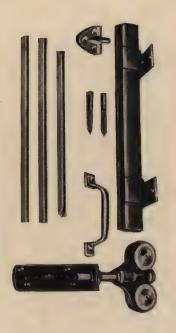
This is another McCabe product that enables you to make your houses unique. Very useful, too, where space is limited. Closet door instead of swinging out, like a hinged door, slides back against side wall of closet. Opens and closes easily and when closed resembles an ordinary door. Write for full particulars. This is something you should know about.

Garage Door Hangers

We make a complete line of Sliding Door Hangers for garage and barn doors, also equipment for combination slide-and-swing doors. Our catalog (No. 24) contains 16 diagrams showing various door arrangements and indicates the proper equipment for each. Doors may be arranged to slide in opposite directions, or all in the same direction. Hangers can be furnished for doors of any size and weight and for openings of any dimensions. On receipt of rough sketch showing size of opening and number of doors we will gladly indicate best arrangement.

RECEDING DOOR WARDROBE HARDWARE

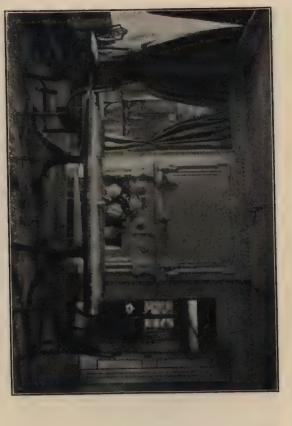




allowing full interior to be used. Four channels are used back at right angles and stand parallel to side of wardrobe doors in side channels. each door carries doors into position at sides of wardrobe each door with two pin plates, one at bottom center of on floor-two parallel to sides of wardrobe and two at in illustration. Each wardrobe has two doors, which slide robes are preferred. This can be accomplished as shown Two pins on rear of each door, top and bottom, guide Used in buildings where individual compartment wardoverhead, with two channels parallel to sides of Two tubular, self-cleaning tracks are used at Two ball bearing carriages, one in center of

DISAPPEARING INTER-WALL DOORS

McCABE DOOR HANGERS =



For the Modern Home!

Showing application of McCabe Hangers to doors disappearing into partition walls. pockets betv

disappear into pockets between partition walls. Hangers, which are especially designed for doors which The illustration shows doors operating on the McCabe

hinged door, as it does not take up the floor space needed furniture or draperies, etc. for the swinging hinged door, and it is not in the way of This type of door has a distinct advantage over

can be very effectively and completely separated if necesdesired, with no doors standing in the way-or the rooms You can have the wide opening between rooms when

The design of the door can be made to harmonize with

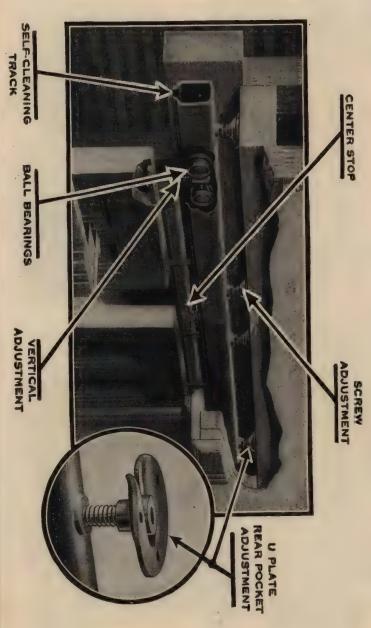
A four-inch pocket in the partition wall is all the space required for the use of the inter-wall doors.

to screw our header plates in position is the simplest form of erection. The U-plate in the rear of the pocket makes it always possible to take out the doors without disturbing Pocket construction invariably provides a header, and

two pieces, the joint coming at the opening edge of the pocket. The tracks are connected with the No. 104 Sets for single doors have the tracks arranged in

bracket which screws into header plate. Three screws only are furnished on the tracks for single sets.

Sets for double doors have the tracks arranged in two pieces, the joint coming in the center of the opening. Each piece of track has two ½-inch screws. The ing. Each piece of track with lifting nuts which slide end screws are furnished with lifting nuts which slide into U-shaped header plates at the rear of the pockets. Center stops are furnished with the double sets



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NATIONAL BUILDERS CATALOG

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DOOR HANGERS GARAGE SLIDING



The following illustrates practical layouts of garage door openings which we feel will be a help to any one planning or designing

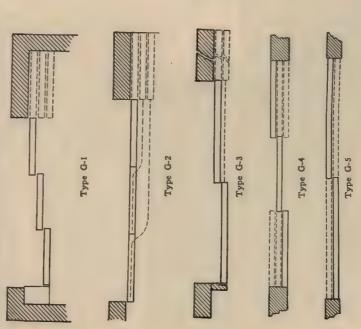
garages.

Any number of doors can be used in these openings and our hangers can be applied to any weight of door.

For the average weight of door up to 200 pounds we use the No. 2 size of track, brackets and rollers, shown on this page.

All parts included in the McCabe equipment for garage or barn doors are built to last. The Self-Clearing track is of heavy gauge steel; carriage frames are of pressed steel, or drop-forged case-hardened steel; wheels are of steel, perfectly true in form and mounted on ball-bearings. Two adjustments, lateral and vertical, enable doors to be fitted accurately to opening without loss of time.

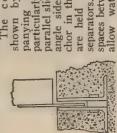
Exceptionally Rugged Construction



Weatherstrips Floor Guides and

Type G-16

For Single or Parallel Sliding Doors



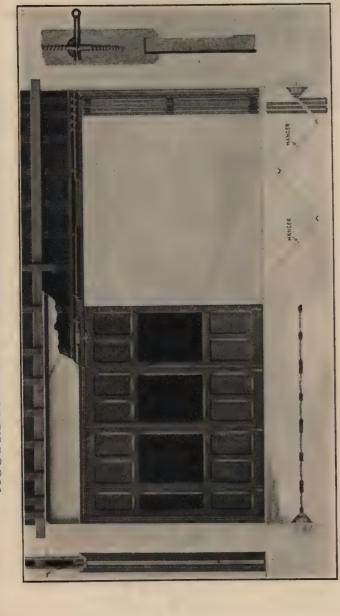
The construction shown by the accompanying illustration is particularly desirable for parallel sliding dors. The angle sides form an anchor in the concrete and are held in position by separators. The clear spaces between separators allow water or dirt to drain off.



The No. 2 track inverted and anchored in the concrete by the No. 9 bracket forms the floor guide shown in this cut. It extends the full travel of the door. The weather strip which is made of heavy sheet steel, black enamel finish, guides between the lips of the track. This not only holds the door in alignment but makes the construction weatherproof.

ACCORDION OR FOLDING DOOR HANGERS

- McCABE DOOR HANGERS



Ball Bearing Swiveled Carriage Accordion or Folding Door Hanger

The above cut shows the application of the accordion folding doors for dividing large rooms into smaller divisions. They are particularly adapted for use in Sunday Schools, Y. M. C. A. buildings, Lodge Halls, Hotel Dining Rooms and places of similar character. Any number of doors may be used commencing with a half door at the jamb. The average width of doors should not exceed three feet. Where an enof doors should not exceed three feet. Where an entrance door is desired use an odd number of doors. This leaves the last door without a hanger, and it can be used as a regular hinged entrance when the opening is closed.

All doors can be folded to one side, or half folded to each side.

The half door must be one half the width of the full door, less the throw of the hinge.

Type G-15

Type G-13

There should be one carriage on each alternate door only, and this carriage should be placed on the exact

it is best to hinge the doors together, fold them and strike a line across the centers and set carriage on this line; then when the doors are hung and folded back the hangers will be in perfect alignment and work center of the top rail of the door. To accomplish this, easily.

The accordion hanger is made in three sizes to suit door thickness: No. 1 track and No. 71 carriage for 1½" doors. No. 2 track and No. 72 carriage for 1¾" doors. No. 3 track and No. 73 carriage for 2"-2½" doors. Headroom No. 1 and No. 2 track—4½"; No. 3 track

Special Folding Door Hanger No. 402

Type No. 402—Used on floors where the regular accordion hanger cannot be used. On this type door the carriage is placed at the end of the door, instead The accordion track is used at the top with the accordion carriage; the bottom of the door has a ball bearing guide which runs in special pressed steel channel in the floor. of the center as in the accordion type.



Hanger and Track for Accordion Door



402 Folding Door Hanger No.

NATIONAL BUILDERS CATALOG

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McKINNEY HINGES

Made by McKINNEY MANUFACTURING COMPANY

PITTSBURGH, PA.

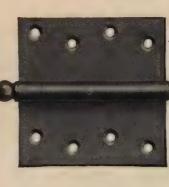


Extra Fine-Beveled Joint, Highly Polished.

of the barrel and the outer edges are ground square. ized steel hinge. The inner edges of the leaves are beveled to conform to the radius brass or bronze hinge. Prefix S if wanted sherardized. No. S 3766 indicates a sherardbe used. A 3766 denotes a wrought steel hinge with two phosphor bronze anti-friction washers. Prefix S if wanted sherardized. No. B 3366 indicates a ball bearing solid the hinges are exposed to the weather solid brass or bronze or sherardized steel should age frequency of operation, especially outside entrance doors. On outside doors where These butt hinges are recommended for wood doors of medium weight and aver-

Sizes: 3x3, 3½x3½, 4x4, 4½x4½, 5x5, 6x 6.

Nos. B3366, SA3760 A3766, B3766, SB3766

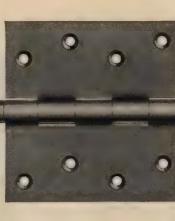


High Grade, Highly Polished Plain Barrel.

wanted sherardized. cepting that it is steel-making a steel bushing in the barrel unnecessary. Prefix S if eled to conform to the radius of the barrel. No. 3713 is the same as No. 3313 exof medium weight where a less expensive hinge than the above is desired. No. 3313 is in either solid brass or bronze steel bushed. The inner edges of the leaves are bev-These hinges are the same weight as those above and are recommended for doors

Sizes: 21/2x21/2, 3x3, 31/2x31/2, 4x4, 41/2x41/2, 5x5, 6x6.

Nos. 3313,

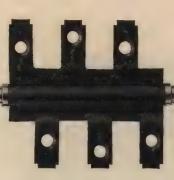


High Grade Prime Coated for Paint.

motion. No. 7141/2 P C is for full size doors. No. 7181/2 P C is for cabinet doors signed to be painted over to match the woodwork. The cut shows how the joint is cut out to eliminate scraping off the paint on the hinge when the door is set in These hinges are recommended for doors of medium weight. They are de-

Sizes of No. 7141/2 P C 3 x3 21/2×21/2 31/2×31/2 4½x4½ 5 x5 4 x4 Sizes of No. 7181/2 P C 21/2×2 3x33 x21/2 21/2×21/2

Nos. 7141/2 PC, 7181/2 PC



McKinney Modern Hinges.

saving is effected. terior decoration. These fine hinges require no mortising; consequently, a substantial The latest innovation in hinges, strikingly attractive and a real contribution to in-

No. 2773 is for cabinet doors, 7/8" to 11/8" in thickness. Sizes of No. 2773—23/4x2. Sizes of No. 2775—3x3, 31/2x31/2, 4x4, 41/2x41/2 No. 2775 is for full sized doors

NATIONAL BUILDERS CATALOG

Nos. 2775, 2773

McKINNEY FORGE RON HARDWARE

Made by McKINNEY MANUFACTURING CO.

PITTSBURGH, PA.

Forged Iron Hardware

and in the rugged texture, beaten and shaped, caught the very spirit of the sturdy iron itself, designs are authentic of the best creations of metal craftsmen of earlier centuries. hardware to a point where it is now available for houses of most modest pretensions. reflect artisanship of the highest order. McKinney has brought genuine forged iron They have

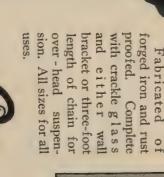
All Essential Pieces

shown are in the same order from left to right. In addition to the pieces shown, there are H & L complete from entrance gate to chimney. chimney irons—everything to outfit a home Alhambra, tration: Curly Lock, hinges, foot scrapers, knockers, mail boxes, from top to bottom of the accompanying illushinge plates, shutter dogs, cabinet latches and Six master designs may be had. These are, Warwick. The entrance handle sets Heart, Tulip, Etruscan,

Easily Available

pany. is sold by leading builders' hardware dealers everywhere. Most of them carry they can get any desired pieces quickly from McKinney Manufacturing Coma stock, for immediate delivery. If not, McKinney Forged Iron Hardware























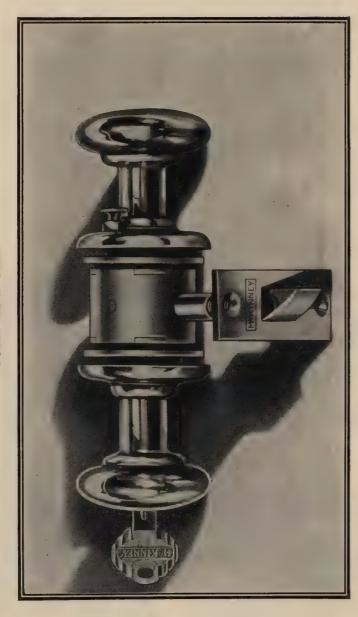
NATIONAL BUILDERS CATALOG

15102 Belfry

NDRICAL LOCKS McKINNEY CYLII

Made by McKINNEY MANUFACTURING COMPANY PITTSBURGH, PA.

A UNIT" "BUILT AS



A Product of Unexcelled Engineering and Modern Manufacturing Based on Three Quarters of a Century of Experience

McKinney Locks are a new development in locks for the home. They represent a vast improvement over ordinary locks. McKinney Locks embody every desirable feature of the old fashioned lock. They offer the following outstanding advantages:

There is no single item entering the decorative scheme of the home that can render more charm than the finishing hardware—

Distinctive Design

none that can detract more from it.

Finishing hardware should be purchased with the utmost care. It should reflect a true expression of the individuality that the

home builder tries to give to each item that enters into his home.

The finishing hardware should be selected so as to give the npression that it was designed to fit into each individual scheme

impression that it was designed to fit into each individual scheme of decoration. Such hardware is obtainable in McKinney Locks. Trim design for McKinney Locks has that same background of authentic artistic beauty that is so well expressed in Forged Iron Hardware by McKinney.

The element of security has been closely guarded in the development of the McKinney Lock.

Extra guards have been provided to protect against the common

methods of unlawful entry of locked doors.

Positive security against skeleton keys has been provided in II McKinney Locks. Many competitive locks can be operated

all McKinney Locks. Many competitive locks can be operated by such keys offered for unrestricted sale in most hardware stores. The possibility of "jimmying" has been provided against in all

McKinney Key locks by bolts that are positively and securely dead bolted when locked.

Cylinders in McKinney locks are in centers of knobs, eliminating the old evils of the possible violation of locks by forced removal of cylinders. Every possible feature of security has been

Convenience in Operation

keys on many of the inside doors of your home are done away with. Bedroom doors are locked and unlocked simply by pushing or pulling a button. Where keys are used, they are of the small cylinder type easily carried on a key ring or inconspicuously placed for occasional use on the inside doors of a home.

The old faults of lock performance also have been overcome. I Doors latch positively when closed. Knobs do not bind when turned, or come loose on their spindles. Door rattle has been eliminated by an adjustable latch bolt that compensates for the shrinkage or swelling in doors. McKinney Locks eliminate the old type of bulky bit keys. All

Security

McKinney Locks cost no more than locks of equivalent materials of ordinary types. They represent a saving of about two-thirds in the cost of application. The application of the usual lock costs approximately as much as the lock itself.

McKinney Locks are applied by simply boring two holes in the door instead of the expensive hand mortise of other days. Discriminating home builders can secure this saving in labor

Reserve enough of your budget to buy adequate hardware, buy it thoughtfully, don't accept the commonplace. Hardware of distinction is available at the store of the Mc-

JEWELRY OF THE HOME McKINNEY HARDWARE - THE

NATIONAL BUILDERS CATALOG

McKINNEY GARAGE DOOR HARDWARE

Made by McKINNEY MANUFACTURING CO.

PITTSBURGH, PA.

McKinney Garage Door Hardware

everything needful for outfitting a garage. Complete sets for around-the-corner doors, sliding-folding sets; also an assortment of swinging hinge sets. Bolts, Latches, Door Holders, Door Dogs, Door Pulls, Hangers and track The McKinney line of garage door hardware includes are also available in McKinney manufactured products. Holders, Door Dogs,

item, except locks, needed for installation including direc-All door hardware is packed in complete sets with every tions and working drawings.

The sets cover all requirements for swinging doors, sliding-folding and around-the-corner doors for 2, 3, 4, and 6 door entrances and different combinations.

Two Door Outswinging Hinge Set



No. 8305C

This makes an attractive two door swinging hinge set, equipped with 16" hinges at the top and bottom and balanced with a 12" hinge in the center. Just one of the many attractive swinging sets available.

Sliding and Folding Three-Door Set Trolley Track For Doors Opening In or Out



Improved three door trolley track sliding, folding set. Makes an ideal installation and closes absolutely weathertight into the door frame. Equipped with a new trolley hanger with malleable iron frame and solid steel lathe turned roller bearing wheels.

Sliding and Folding Three-Door Set For Doors Opening In or Out Flat Track Set



No. 8103

This moderately priced sliding-folding set closes absolutely weathertight in the door frame and is equipped with the improved Tandem type roller bearing hanger.

Around-the-Corner Three-Door Set Flat Track



narrow garages with limited inside floor space. Equipped with Tandem type roller bearing hangers. Requires only 5" headroom and 4" inside wall space from side wall to Improved three door Around-the-corner set-ideal for This set makes an attractive appearance door opening. This set makes an attractive appearant

Improved Garage Door Holder



No. 1971

ally strong being made of heavy U-shaped wrought steel. It cannot break or buckle regardless of wind pressure against the door. When the door is opened the holding bar drops by gravity holding the door securely locked in the opened position. The bar is released by simply pulling This newly designed garage door holder is exceptiondown on the chain pull.

Special Features

AND AUT-O-DOR

Made by RICHARDS-WILCOX MFG. CO. GARAGE DOORWAY EQUIPMENT

BRANCH OFFICES Aurora, Illinois

CHICAGO, ILL.
KANSAS CITY, Mo.
MINNEAPOLIS, MINN.
SEATTLE, WASH.

NEW YORK, N. Y. CLEVELAND, OHIO INDIANAPOLIS, IND. OMAHA, NEBR.

PHILADELPHIA, PA.
CINCINNATI, OHIO
LOS ANGELES, CALIF.
NEW ORLEANS, LA.

BOSTON, MASS.
ST. LOUIS, Mo.
SAN FRANCISCO, CALIF.
DETROIT, MICH.

RICHARDS-WILCOX CANADIAN Co., LTD., LONDON, ONT., WINNIPEG, MONTREAL

Richards-Wilcox Mtg. (o AURORA, ILLINOIS, U.S.A.

Advantages

obstructed opening! And you slide the doors inside doors slide on roller bearing hangers. are hinged at jamb on inside of building and the other of the opening may be used at one time. End doors plete illustrated catalog. No awkward, dangerous center posts . . . free, un-Slidetite Garage Door Hardware. Send for com-All

For 8 to 30 ft. Openings

the opening clear of the jamb. Heavier No. 435 Hard-ware is furnished with butts which cause the doors, half-surface hinge which throws doors on each side of the opening clear of the jamb. Heavier No. 435 Hard-No. 435 hardware for light doors is furnished with a

when standing at right angles to the opening, to project into the opening. With the No. 1035 hinge, the doors swing clear of the opening.

Electric Operators

various parts of the garage. cycle of operation by the use of a standard electric stopped and reversed mechanically at the end of each fastened to garage doors in much the same manner as a door-check. However, it differs from a door-check switch. in operation, in that the doors are propelled in both directions by a reversible motor. The R-W Aut-O-Dor Electric Operator may be Push button controls may be placed in The motor

Continued on next

NATIONAL BUILDERS CATALOG

garages, should garages, doors 134 doors fit tight, are weather-proof, ware is made to handle doors up to hard usage, doors thick should be used. With Slidetite equipment the to 21/2 inches thick. should give satisfactory service. For public garage doors, subject R-W Laminated door panels praceliminate shrinking, swelldoors 21/4 inches used. R-W hardinches thick For private inches



raultless automatic service for any garage doorway, public or private, any width up to 22 feet, is provided by the Aut-O-Dor Electric Operator. Button controls, or pull cords, operate the doors from any part of the garage. No special switches are re-

it is unnecessary to dig your way into the garage, as Slidetite doors open inside. The hinges used at the jamb are provided with an offset which throws the doors in back of the jamb and gives a clear open-

to pile up against the outside of the garage doors,

In the winter time when snow and ice are liable

Equipment

hinges, bow handles, top and bottom bolts and all screws and bolts necessary to erect. Lock for entrance door not furnished with sets, but should be All necessary hardware is furnished with each "Slidetite" outfit, including track, hangers, brackets, hinges, bow handles, top and bottom bolts and all specified separately

Hangers have metal wheels, vertical adjustment and ball-bearing swivel pendants. Intermediate and end brackets are adjustable.

necessary, and lower corner of door to prevent chafing by guide. the doors in place. Top and bottom Cremone bolts are required to lock ce. Floor guides are furnished where two bumper shoes are attached to

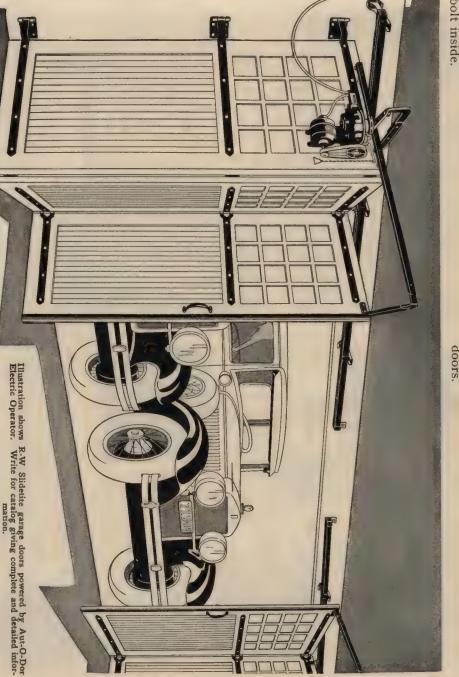
Locking

If no separate entrance door is available. (1) hang the doors so one door near the center of the opening will be hinged free to serve as passage door, or (2) specify No. 1125 outside lock with No. 617 Cremone

quired. Every garage door requirement is fully met by Aut-O-Dor equipment, with No. 1200 or No. 1300 —sliding doors, folding doors and swinging doors.

of the operation and stopping in a slow, easy manner without any sudden jerk or pull. Each operation of the equipment is complete—that is, complete opening R-W equipment is designed to guard against every possibility of accident. Doors may be operated by hand if electric current is shut off. If doors are hit Safety Features ually, the action becoming more rapid in the middle and complete closing. mechanism suffers no damage. Doors open gradwhile in motion, friction clutch allows slippage so the

suggest to you the proper equipment to handle any ing garage doors, If you have any special problems in regard to hang-g garage doors, R-W engineers will be glad to to



STANLEY GARAGE DOOR HARDWARE

Made by THE STANLEY WORKS

SALES OFFICES AND WAREHOUSES

NEW YORK, N. Y., 100 Lafayette Street LOS ANGELES, CAL., 1202 Washington Building SAN FRANCISCO, CAL., 576 Monadnock Building

NEW BRITAIN, CONN.

HARDWARE STANLEY

FANLEY WORKS Made by THE ST

NEW BRITAIN, CONN.

SALES OFFICES NEW YORK, N. Y., 100 Lafayette Street Los Angeles, Cal., 1202 Washington Building San Francisco, Cal., 576 Monadnock Building

AND WAREHOUSES

CHICAGO, ILL., 61-67 West Kinzie Street SEATILE, WASH., 619 Mutual Life Building PHILADELPHIA, PA., 617 Filbert Street

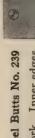
Wrought Steel and Bronze Hardware, including Ball Bearing Butts and Hinges, Latches, Handles, Bolts, Storm Sash Hardware, Screen Hardware and Blind Hardware. The Stanley Works have been manufacturing high grade hardware for over 80 years. All Stanley wrought steel products are manufactured from cold rolled steel from their own steel mills. Uniform quality is assured. Stanley products can be furnished in any finish to match other hardware used, and can be obtained from any builders' shardware dealer.



Stanley Wrought Steel Ball Bearing Butts No. BB239

Recommended for use in the finest houses. Equipped with Stanley Ball Bearings to insure ease of operation. Non-rising, self-lubricating loose pins. Inner edges of leaves beveled. Highly polished and heavily plated. Furnished in all standard finishes.

Sizes, inches, 2½x2½, 3x3, 3½x3½, 4x4, 4½x4½, 5x5, 6x6.



Stanley Wrought Steel Butts No. 239

Adapted for fine work. Inner edges of leaves are beveled. Loose pin is non-rising and self-lubricating. Highly polished and heavily plated. Furnished in all standard finishes. Sizes, inches, 2x2, 2½x2½, 3x3, 3½x 3½, 4x4, 4½x4½, 5x5, 6x6.



Stanley Wrought Steel Butts No. 2411/2

A finely polished and plated butt recommended for general use. Loose pin is non-rising. Furnished in all standard finishes.

Sizes, inches, 3/2x3/2, 4x4, 4/2x4/2, 5x5 and 6x6.



Stanley Wrought Steel Butts No. K 246 WR

Designed for use on doors of residences. Wrought iron finish will match early wrought iron hardware. Can be furnished with iron or brass steeple tips.

Sizes, inches, 3x3, 3½x3½, 4x4, 4½x4½, 5x5.



Stanley Wrought Steel Light Loose Pin Butts No. 289

Planished and plated. Recommended for use on light-weight doors such as china closets, cabinets, cupboards, etc.

The Stanley Architects Manual gives standard specifications and detail drawings for the selection and installation of Stanley hardware. With this useful book it will be easy to choose and specify hardware of the correct weight and finish for every need.

Furnished in all standard finishes. Sizes, inches, 2x2, 2½x2, 2½x2½, 3x2, 3x3.

NE STA

Butts Designed for provided Extra clearance is knuckles and edges Stanley Wrought Stee Painting No. 235 of the

between

of the leaves to prevent marring the paint when the door is operated. Provided with a priming coat to serve as a base for painting. Sizes, inches, 3x3, 3½x3½, 4x4, 4½x4½, 5x5, 6x6. Supplied with flat button tips, but ball tips can be furnished if desired. Loose pin is non-rising.

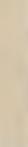


Stanley Wrought Steel Surface Bolts No. 381 and No. 379

Sizes 4, 6, throw. Strong bolts used to fasten the top and bottom of double doors and windows. No. 381 ½ in. half-round rods. 9, 12 and 18 in. lengths. 1¼-inch

No. 379 % in. half-round rods. Sizes 3, 4, 6 and 9 in. lengths. 3 in. size has 5% in. throw; 4, 6 and 9 in. sizes have I inch throw.

in all standard Furnished finishes.



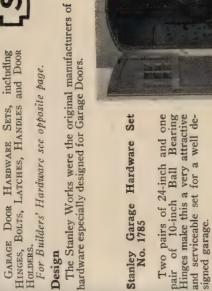
Can be used on doors of any weight. Especially recommended for doors equipped with door checks, single or double acting spring hinges. Equipped with composition rubber tip, self adjusting to unevenness of the floor. Slight pressure on trip lever releases the holder. Plates are 5x2 in., diam. of bolt ¾ in. Throw 1¼ in. Furnished in all standard finishes. Stanley Wrought Steel Door Holders No. 456



CORRECT HARDWARE MADE EASY!

This Manual of 125 pages, fully illustrated, will be sent to Building Contractors on request, free of charge.

THE SELECTION OF



STANLEY S.W.

Products

HOLDERS

Design

Stanley Garage Hardware is regularly packed in complete sets to meet the requirements of various types of garage doors. They are packed complete with screws and bolts. Garage Sets

PHILADELPHIA, PA., 617 Filbert Street CHICAGO, ILL., 61-67 West Kinzie Street SEATTLE, WASH., 619 Mutual Life Building

Stanley Garage Hardware Set for Rolling Doors No. T2505

The hardware in this set can be arranged to make two different combinations of doors.

Doors roll easily and require very little floor space in which to oper-

of the two rolling doors.
When the service door is ate. "A" Combination. The service door is swung from the jamb, op-erating independently

ice door is opened the rolling doors can be drawn along on the track past the service door as far as necessary. The two rolling doors need very little wall space, a point to consider in selecting hardware for a small garage.

"B" Combination is arranged so that all doors can be rolled along the sidewall at one time. Either end door can be made the service door, opening in.



For garage doors opening in or out. Made for doors 8 ft. high with 3¼ in. adjustment downwards, and 1½ in. adjustment upwards at ¼6 in. intervals—special sizes to order. Made of cold rolled steel, handle bronze plated. Applies considerable leverage at top and bottom and will draw door into place even when warped.

Stanley Wrought Steel Garage Door Holders No. 1770

Stanley Extra Heavy Wrought Steel Bolt Espagnolette Type -No. 1053

Articles comprising Set No. 1785

Stanley Wrought Steel "Kee Bolt" No. 1053 Bolt Showing Bolt When Open

Prevent doors from slamming and damaging the car when entering or leaving the garage. Can be used on doors with straight or curved tops. Easy to apply. A slight pressure on the thumb-latch disengages the holder, allowing the door to close. Bar is 30 inches long. Packed one pair in a package, ready to apply.

Operates in a three-fold capacity—a bolt, a latch and a lock. Pressure on the thumb-piece releases door after slight turn of the key. Stanley Wrought Steel "Kee Bolt" No. 1000 without cylinder No. 1005 with cylinder

Articles comprising Set No. 2505

Stanley Wrought Steel Mortise Thumb Latch-No. 1289

Stanley Heavy Wrought Steel Ball Bearing Garage Hinges No. BB1460

Specify thickness of door

Designed for garage doors that are not rabbeted. Made for doors 15% in. to 3 in. in thickness. All parts unusually large and strong. Latch bolt drop-forged and cold galvanized. Spring of hard phosphor bronze. Latch and handles of wrought steel.



NATIONAL BUILDERS CATALOG

Made of extra heavy wrought steel toughened and hardened by cold rolling. Reversible, can be applied as a full surface or half surface hinge. Made in three sizes, 18 in, 24 in., and 32 in. (Length of door leaf.)

Ball Bearing Hinges were designed to eliminate wear on the joint of the hinge and to insure ease of operation.

Loose Pin-Oval Tip

223

SEDGWICK DUMB WAITERS AND ELEVATORS

Manufactured by SEDGWICK MACHINE WORKS

134 West 15th Street, New York, N. Y.

Representatives in Many Principal Cities FACTORY-POUGHKEEPSIE, NEW YORK

and Ash Hoists. TRUNK LIFTS, INVALID ELEVATORS, DUMB WAITERS, FUEL LIFTS,

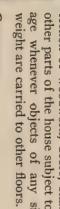
Cold Storage Dumb Waiters, Hospital OTHER PRODUCTS - Book Lifts,

Dumb Waiters, Laundry Lifts, Tube Dumb Waiters, Under Counter Dumb Waiters, Outdoor Dumb Waiters.

General Information

are more pleasant to live in and easier to sell. of Sedgwick Hand Power Dumb Waiters and Elevators Homes equipped with one or more of the many types

Prospective buyers and home owners appreciate the advantages of Sedgwick Dumb Waiters, Fuel Lifts, and Trunk Lifts for carrying loads from floor to floor not only because of the labor and effort saved, but also for the proother parts of the house subject to damage whenever objects of any size or tection of woodwork, doors, stairs and



Guarantee

are guaranteed for five years against dethat time if returned. fects in workmanship or material and will be repaired free of charge during Sedgwick Dumb Waiter machines

absolutely safe.

Availability

a great interest in making recommendaments of service. Consequently we take by the selection of the outfit exactly suited to the conditions and require-The greatest satisfaction is assured

Dumb Waiter

results in actual use. Standard tions in order to secure the best sizes are carried in stock.

Sedgwick Service

operation. that will give best results in to recommend the exact outfit gladly send you our New Catalines information needed by us Write for Form 136, which outwhich log, blue prints, specifications and full details of outfit in Our Service Department will you are interested.



Five of the Twenty-one Standard Types of Sedgwick Outfits:

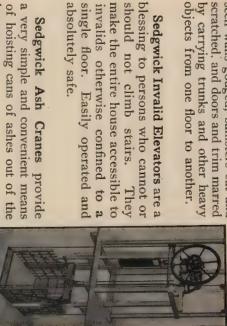
The Automatic Brake and other exclusive Sedgwick wonderful convenience in the home. Food trays, baskets, laundry and and quickly sent from floor to floor numerous other loads can be easily Sedgwick Dumb Waiters are a

away with the muss and fuss of carrying wood upwhich more homes are being equipped each year. stairs to the fireplace. Sedgwick Fuel Lifts make fireplaces usable, doing An attractive feature with

features assure absolute safety and ease of operation

Sedgwick Trunk Lifts appeal to those who have

by carrying trunks and other heavy objects from one floor to another. seen walls gouged, banisters cut and scratched, and doors and trim marred make the entire house accessible to should not climb stairs. blessing to persons who cannot or Sedgwick Invalid Elevators are a



a very simple and convenient means of hoisting cans of ashes out of the Sedgwick Ash Cranes provide

Delivery and Installation

basement.

stock and can be shipped at prints and directions furmade by local labor from blue can be shipped within one rienced mechanics. nished with all equipment or we will send our own expe-Standard sizes are carried in Special sizes or outfits Installation can

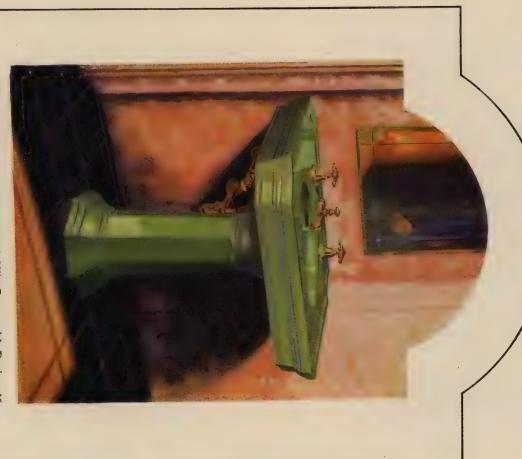
SEDGWICK MACHINE WORKS, For further details and litera-



PLUMBING AND HEATING MATERIAL FOR EVERY PURPOSE

Made by Founded by CRANE CO. R. T. Crane 1855

836 So. Michigan Ave., Chicago, Ill. For Water Softeners see page 236 GENERAL OFFICES



The Elegia lavatory in No. 420-A Nile Green with Design 45 fluted ornamental gold plated trimmings.

Crane colors, ranging from a delicate orchid pink to a deep Lisbon Blue, form a rainbow from which a choice may be made. A cordial reception awaits you at a nearby Crane Exhibit Room.

Invalid Elevator

-Quarter

Crane Co.

1931

-dant-

- CRANE PRODUCTS

225

Crane Co.

NATIONAL BUILDERS CATALOG

1855



C 142-M3

The "Corwith" Lavatory

The *Corwith* design is distinctively CRANE. Various styles of *Corwith* lavatories, while retaining the design motif, are available to meet any taste. Inspired by present-day architecture, the set-backs in the slab, the rectangular basin, and the triumphant simplicity of form suggest the pure beauty of the newer skyscrapers.

and quick draining direct lift waste fixture. Square paneled metal legs as well as legs of glass are furnished

china legs and the efficient Securo metal spout supply

with other models which may be seen at any of the

Crane Exhibit Rooms, located in all principal cities. The sizes are: 30x24, 33x24, 36x24 and 42x24

Model C 142-M3, illustrated above, is furnished with



C 32212 Design 45

C 32212 Design 40

C 32238 Design 50

Combination "Securo" Spout Lavatory Supply and Waste Fixtures

Beauty, either severely simple or elaborately ornate, to please any taste, graces each finely wrought group of the large selection of Crane ornamental fixture trimmings.

The Octagonal Design 40, the Fluted Design 45 and the Crystal Design 50 as developed for lavatories are

illustrated here. In these designs, as in all other distinctive Crane designs, the complete group of bath, lavatory and shower fittings may be secured. Plating will be of chromium, silver, or gold to suit any preference; or to further the general decorative scheme of the bathroom.



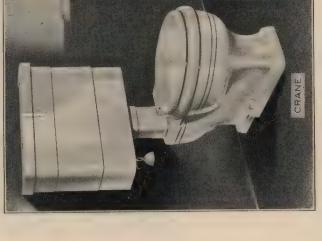
The "Corwith" Lavatory C 220-C1

The "Corwith" Lavatory

The *Corwith* twice-fired vitreous china pedestal lavatory with the *Securo* integral spout supply and quick draining direct lift waste fixture. The sizes are: 24x21, 27x22, 30x24, 33x24, and 36x24 inches.

The "Corwith" Closet

Corwith beauty of design and sanitation are found in the Corwith twice-fired vitreous china closet combination. Its 11x16-inch elliptical rim opening and its lower-thanaverage height are hygienically correct while its muffled rim supply, large tank and scientific tank fittings produce a flush that is both quiet and efficient.

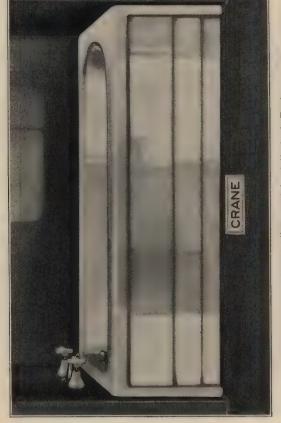


The "Corwith" Closet

The fixtures illustrated on this and the following page are termed "The Corwith Group" because of their characteristic receding planes. This motif adds a distinction to the beauty of Corwith fixtures that is as pronounced when they are installed separately as when they are grouped.

The "Corwith" Porcelain (all-clay) Bath

The Corwith porcelain (all-clay) recessed bath with the Accesso pop-up waste and concealed overrim spout supply fixture. Made in regular and special selection in lengths of 5 and 5/z-feet.



The "Corwith" Porcelain (all-clay) Bath C 2844-LD32

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Crane Co.

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NATIONAL BUILDERS CATALOG

CATALOG

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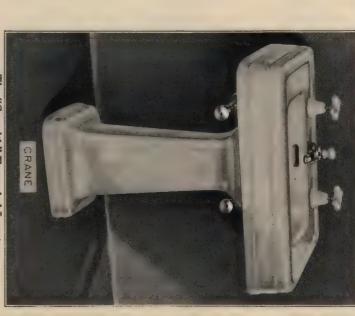
The "Corwith" Lavatory
C 395-C1

The "Corwith" Lavatory

The *Corwith* twice-fired vitreous china lavatory with concealed wall brackets and the *Securo* integral spout supply and quick draining direct lift waste fixture. A dressing table to match is furnished in a 36x21-inch size. The lavatory is furnished in 24x21, 27x22, 30x24, 33x24, and 36x24-inch sizes.

The "Corwith" Enameled Bath

The Corwith enameled corner bath with concealed top nozzle supply and standing waste fixture, concealing mixing valve shower, white duck curtain and rod. Corwith baths, for recess or corner, are $4\frac{1}{2}$, 5, 5½ and 6-feet long.



The "Corwith" Enameled Lavatory
C 2000-M1

The "Corwith" Enameled Lavatory

The Corwith enameled pedestal lavatory with the Securo combination metal spout supply and quick draining direct lift waste. Sizes 24x20, 27x22-inch. Enameled fixtures are furnished in color or white, acid-resisting or regular enamel.



The "Corwith" Enameled Bath C 3284-LD82

NATIONAL BUILDERS CATALOG Crane Co. Continued on next page



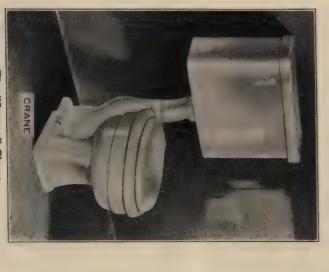
The "Norwich" Lavatory C 255-M1

This *Norwich* twice-fired vitreous china lavatory accords with the trend of modern design. Its rectangular basin, straight lines, and square pedestal combine to achieve a beautiful severity of form. It may be had less pedestal for concealed wall bracket installation or on leg. Sizes: 24x21, 27x22 and 30x24 inches. If desired with oval basin the *Ipswich* lavatory will be furnished.



The "Ipswich" Lavatory C 598-E2

A singular grace is gained by the *Ipswich* lavatory when supported on a single leg. Extra slab space because of the oval basin is added to by means of the compact *Securo*, *Ir*. supply and quick draining direct lift waste fixture. This waste drains the bowl in seconds, the rush of water carrying away floating particles. *Ipswich* on leg is furnished in 20x18 or 24x21-inch size.



The "Santon" Closet C 10554

The new Santon twice-fired vitreous china closet combination, harmonizing with the Norwich lavatory in design, answers the demands of modern hygiene. The powerful flush and convenient shelf tank cover are other features not usually found in closets as moderately priced.



Hygienic Height "Saneto Junior" Closet C 10606-A

The hygienic height Saneto Junior twice-fired vitreous china closet is 13½ inches high, this low closet feature being recommended by many doctors. The syphon jet construction assures efficient operation and the all white seat, china tank and trimmings promote complete sanitation.

NATIONAL BUILDERS CATALOG

1855

Continued on next page

Utility, Beauty and Convenience of Crane Fixtures

bathroom without trouble-free fittings nor convenience and beauty without correctly designed fixtures. All three Utility, beauty and convenience are sought in each room of the modern home. Utility cannot be had in the requisites are found in CRANE plumbing.

Only a few of the better fixtures have been illustrated here. A visit to a nearby Crane Exhibit Room or a request for the new book, "Homes of Comfort," will bring more complete information.

The Combination Sink and Laundry Tub

The combination sink and laundry tub saves time, space and money. The 14-inch deep laundry tub is always available for a small personal washing by reversing the removable drainboard. The combination is offered at a price that is less than if the two fixtures were purchased separately, with a consequent saving in space and installation charges. Sizes: 36x22, 42x22 and 50x22



The recess in the low

The Corwith enameled sink reveals the

Combination Sink and Laundry Tub

CRANE

The "Corwith" Enameled Sink C 19168-PAT

The "Corland" Enameled Sink

Strainer gives the same trim appearance that is found in the Corwith. It has a 4-inch all Crane sinks, the Corland is furnished in The Corland enameled sink with Dual colored or white, regular or acid-resisting box back which provides a convenient shelf. enamel, with or without adjustable legs. sizes are: 60x24 and 74x24 inches. but is without the recess for trimmings.



The "Corland" Enameled Sink C 19177-JD

NATIONAL BUILDERS CATALOG

1855

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Crane Co.

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EXCEL METAL MEDICINE CABINETS

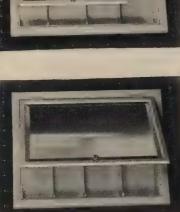
Made by EXCEL METAL CABINET CO., INC. JAMESTOWN, N. Y.

Products

EXCEL METAL MEDICINE CABINETS - Furnished in Pure White or any desired color. WALL HANGING MIRRORS.

Hollow Door Constructed Cabinets-Recess Type

polished. Door opening is rabbeted, in which door fits Made of 20-gauge metal furniture steel, formed in one piece, all corners gas-welded flush, then ground and





Styles 7, 8, 9 and 10

snugly. Furnished with beveled plate glass mirrors, aluminum shelf supports and polished plate glass shelves. Cabinets Nos. 1, 2, 3, 4 are reversible and can be used either right or left hand. Styles 1, 2, 3, and 4

	4 and 10	24x30 20%x26%	21 1/4 x 27 1/4	No. 1-14x20 No. 2-16x22 No. 3-18x24 No. 4-20x26 No. 7-14x14 No. 8-16x16 No. 9-18x18 No. 10-20x20 0 50 40 50 50 50 60	360
ted Cabinets	3 and 9	22x28 18%x24%	19 1/4 x 25 1/4	No. 3-18x24 No. 9-18x18 50	300
oor Construc	2 and 8	20x26 16%x22%	17 14x23 14	No. 2-16x22 No. 8-16x16	240
-Hollow D	1 and 7	18x24 14 %x20%	15 1/4 x 21 1/4	No. 1-14x20 No. 7-14x14 35	210
Specifications-Hollow Door Constructed Cabinets		e, in.	pening Required.	in in in Single	g Wt., 1bs.—6 in



Has Body made of 20-gauge plate glass shelves and mirror. Door is made of 18-gauge steel with a drawn moulding adjustable shelf brackets and metal furniture steel and gas-Wall Type Metal Cabinets welded in corners, ground and polished.

Styles 105, 19 and 20

frame to hold mirror in place.

Excel	,
the	
and	
Cabinet	inet
Vanity	ecess Cab
Venetian	n Mirror Recess Cabinet
le New	renetian N
0	>

plate glass. Polished plate glass shelves are adjustable furnished with right hand doors, may also be had with disturbing cabinet body. Chain stop protects mirror from wall or side lights. Mirror supported by ledge at bottom of door. Mirrors are of highest quality bevel Doors hung on invisible hinges, can be removed without Body of cabinet made of heavy metal furniture steel. left hand door. Can be furnished in any color. and are supported by aluminum brackets.

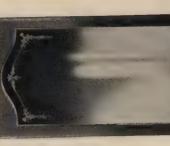


O	- 1	
Recess		
Venetian Recess C	Cabinets	
The New Venetian Vanity Cabinet	Specifications-Venetian Cabinets	
he		1

	Excel Venetian	35	2 20	55	35	13	
Weight	Vanity	50	28	110	110	OCT	
Glass	Shelves	2	70	1 m	(1)	0	
Wall	Required Inches	11x14 ½	13x18 ½	15x26 1/2	17x22 ½	Z/XZX 1/2	
Wing	(Vanity Only), In.	6x17	6x21	6x29	6x25	6x31	
Overall Face of	Cabinet Inches	13 1/2 x17	15 ½ x21	17 1/5 x 29	19 1/2×25	19 1/2 x 31	
Mirror	Inches	14x20	16x24	18x20	20x28	20x34	
Carrie	Style	A	20	೧೭	i E	[Z	

Excel Wall Hanging Venetian Mirrors

Can be furnished without design, or with special design, as desired. Can also be furnished with square top with Are arranged with metal backs and concealed hangers. or without design.



105 107 19 108 19 108 19 108 19 108 19 108 19 108 19 108 19 108 19 108 19 108 18 18 18 18 18 18 1



No. 1 Venetian Mirror Excel Wall Hanging Venetian Mirrors

				-	1
Charles A	13	<u>ں</u>	Ω _	3	*
14×20 16×24	16x24	18x26	18x32	20x28	20x34
Excel Cabin	lets or Mi	rrors speci	In ordering Excel Cabinets or Mirrors specify style and number. Prices on application.	number.	

MORTON STEEL MEDICINE CABINETS

Mirrors, Adjustable Ironing Boards in Wood or Steel Cabinets

Made by MORTON MANUFACTURING COMPANY

5110 West Lake Street, CHICAGO, ILL.

RORS and BACK PLATES for wall mounting; and Morron Wood and Steel Cabinet Adjust-ABLE IRONING BOARDS. MORTON MEDICINE CABINETS; MORTON MIR-

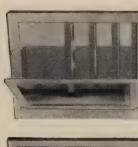
Morton Medicine Cabinets

ready to install. Door mirrors are heavy plate glass, plain Morton Medicine Cabinets come in individual cartons,



with brass screws, to recess or hang on wall. Cabinets are 18 and 20-gauge rust resisting steel, corners electrically butt-welded, body electrically or beveled. Finest plate glass shelves. High gloss white enamel baked on finish. Complete

flange. Extension collar to match cabinet furnished at slight extra cost. spot welded. Shelf brackets die cast in sides.
All models are 5 inches deep, frame has 1 inch return



Model B
Recessed type
with open shelf
below:

Model A



All-mirror door. Size 16x20 in., with or without etching.

Made in 1 size only. Model H 'Georgian'



Model K 'Vanitie Venetian'

Model F
With modernistic mirror. One of 6 modern designed mirrors we can furnish at slight extra charge.

Recessed type without open shelf below.

Model F 'Venetian'
All-mirror door
artistically etched.
Four sizes. 18x32 in. center mirror with 8x29½ in. side wings. Made in 1 size only.

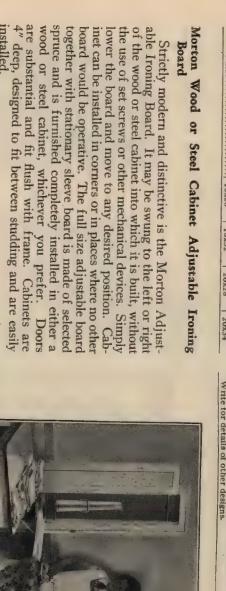
Specifications-Morton Medicine Cabinets

Wall Openi

	: :	l: :	:::	
	18x26	10x14	10x14	Wall
	18x32	12x16	12x16	Opening R
	17x20% 20x28	14x18	14x18	equired, In
-	17x271/2 20x34	16x20 1/2	19x22 % 16x20	ches
Contract of the Contract of th	*Mirrors and back plates for wall mounti	*Mirror Size	*Mirror Size	Model
	ng can be furnished.	15x25 1/2 (Made in one size only)	13x16% (Made in one size only) 16x20	Wall Opening Required, Inches

A' (Without open shelf)...
*Mirror Size...
*B' (With open shelf)...
*Mirror Size...

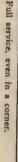
Board



Specific	ations—N	-Morton Iro	oning Board	ard Cabine	nets
Style of Cabinet	Overall Width Inches	Overall Height Inches	Overall Depth Inches	Shipping Weight	Wall Openi Required Inches
Wood	13	80 1/2	31/2	30 lbs.	14x81 1/2 (Starting from floor.
Steel	16	68	4	55 lbs.	14x66 (Start o
					TO THERE SHOOM

installed.

NATIONAL BUILDERS CATALOG



UNITED STEEL MEDICINE CABINETS

Manufactured by UNITED METAL BOX CO., Inc.

473-491 President Street, BROOKLYN, N.Y.



Steel Bathroom Cabinets

cut white enamel cabinet to the luxurious Veneis complete. It ranges from the simple, clean nets, Clothes Hampers, Utility Cabinets, and the tian type cabinet. The "United" line of Steel Bathroom Cabinets It includes open shelf cabi-

is desired, of solid brass. The door is removably mounted on the cabinet by ball tip hinges and engraved mirror. pletely encloses and protects the handsomely beautiful 3 Wing Vanity cabinets.

The Venetian type cabinet has been greatly door and an easy working adjustable brass catch. has a brass link to limit outward swing of the of cold rolled steel or when chromium plating improved. A one This channel frame is made piece channel frame com-



Series 6500

Constructional Features of All "United" Cabinets

Series 7500

Indestructible—Entire cabinet is made of heavy gauge steel and protected against rusting.

Dustproof Interior—Front of cabinet is made from one piece and the door fits snugly to exclude dust and dampness.

Hinges—The cabinets are made with concealed hinges, and are specially mounted so that the door will not tear loose or sag with rough

usage.

Doors—All doors are of built up hollow steel construction specially made for rigidity without Adjustable

are furnished ported by perm Substantial I where used is are fastened Shelves—Bulb edge glass shelves with each cabinet, and are supmanently attached shelf clips.

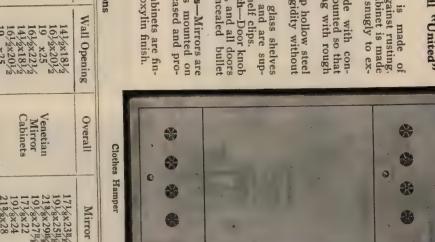
Door Knob and Catch—Door knob of ornamental glass, and all doors by means of concealed bullet

of high grade inside of door Beet Quality Plate Glass Mirrors—Mirrors are high grade double plate glass mounted on side of door and completely encased and pro-Enamel Finish-Cabinets are fin-

High Grade Enamel Finish—Cabinets are hished in a permanent smooth pyroxylin finish.

Series 1500





*1601A *1602A *1604A	1500 1500A 1501 1501A 1502A 1503	Cat. No.
16½x22½ 19 x25 16½x26½	14 ½x18½ 14 ½x18½ 16 ½x20½ 16 ½x20½ 16 ½x20½ 16 ½x22½	Wall Opening
19x25 21x27 19x29	17x21 17x21 19x23 19x23 21x27 19x25	Overall
16x16 14x18	10x14 12x16 12x16 14x18 16x22 14x20	Mirror
6503 2000 1000	7500 7501 6500 6501	Cat. No.
16½x22½ 16 x36¼ 14½x36	14/5x18/5 16/5x20/5 19 x25 16/5x22/5 14/5x18/5 16/5x29/5 16/5x29/5	Wall Opening
1884×3814 17 ×3812	Venetian Mirror Cabinets	Overall
19½x26 Clothes Hamper Utility Cabinet	19)-6x25/16 218-x29/16 19)-6x27/16 19)-6x27/16 17/-6x22 19)-6x24 218-6x28	1717-22IIV

Write for Literature on Complete Line

*Open Shelf Type.

SANI-SEATS CHURCH

CHURCH MFG. CO. Manufactured by C. F.

HOLYOKE, MASS.

SERVICE

Kansas City, Mo.
Los Angeles, Calif.
Miami, Fla.
Minneapolis, Minn.
Montreal, Que.

DES MOINES, IOWA DETROIT, MICH. HALIPAX, N. S. INDIANAPOLIS, IND. PITTSBURGH, PA.

Atlanta, Ga. Boston, Mass. Chicago, Ill. Cleveland, Ohio Dallas, Texas

NEW HAVEN, CONN. NEW YORK, N. Y. PHILADELPHIA, PA. ROCHESTER, N. Y. ST. LOUIS, Mo.

The super-feature of all Church sheet covered seats is the lap weld method of sealing the sheathing to the

Lap welding is recognized as the

hardwood base.

strongest method of joining, and by this exclusive

Church process the surface becomes a smooth homo-

plated washers and rubber washers furnished

on all hinges.

nickel

Guarantee-Church Sani-White and Sani-Colored seats are guaranteed for five years not to crack, split, builder a new complete catalog giving full information and specification data on the complete line of

Church products.

Catalog-There is available for any architect

peel, craze nor discolor.

Or

pure ingot brass

Hinge-Hinges are cast from heavily nickel plated and buffed.

geneous finish.

Brass wing nuts,

SAN FRANCISCO, CALIF. SEATTLE, WASH. TAMPA, FLA. WASHINGTON, D. C.

Church Sani-White and Sani-Colored Seats

Construction-Lumber-The wood used in Church Sani-White and Sani-Colored seats is selected hardwood, air dried and thoroughly seasoned in our own kilns. These seats are all made from full 11/2" stock.

Reinforcement-Closed front seats are reinforced both front and back by means of spiral grooved dowels. These dowels measure 58" by 7" and are forced into the seat cross grain rendering it split proof. Open front seats are doubly reinforced by two spiral grooved dowels inserted cross grain in the Finish—Church Sani-White and Sani-Colored seats are sheet covered which means that a heavy white sheathing is veneered on the hardwood base by our special lap weld process, resulting in a seamless surface which affords the greatest amount of protection against wear, tear, and atmospheric conditions.



No. 425 Church
No. 425 Church Sani-White
sheet covered seat and cover for
regular bowl, with nickel plated
cast brass bar hinge. No. 142 Church Sheet covered seat and cover for regular bowl, all white including



No. 162 Church Sani-White sheet covered open front full saddle seat and cover for regular bowl, all white including hinge.



No. 186 Church
Sheet covered open front full saddle seat and cover for extended lip bowl, all white including hinge.



No. 530 Church
To. 530 Church Sani-White
Te covered open front and
n back full saddle seat, no
rr, for extended lip bowl, with
y nickel plated cast brass
k hinge.

No. 251 Church Sani-White sheet covered open front full saddle seat, no cover, for regular cast brass check hinge.

No. 220 Church
No. 220 Church Sani-White
sheet covered seat and cover for
regular bowl, with heavy nickel
plated cast brass bar hinge.



No. 500 Church Sani-White sheet covered open front and copen back full saddle seat and cover for regular bowl, with heavy nickel plated cast brass bar linge.

Continued on next page

Church Sani-Black Seats

- CHURCH SANI-SEATS -

position hard rubber product, created for public buildings where unusual abuse may be expected. They are produced through the combined processes of Description-Church Sani-Black Seats are a com-

The surface is thick composition hard rubber, vulcanized in a mold under 216,000 lbs. of hydraulic heat pressure. This produces a hard, smooth, indehydraulic pressure and veneering. structible finish.

tirely from hydraulicly pressed wood fibres. The fibres are in their natural wood state, thereby retaining the lignins (nature's resinous cohesive binder). The core thus formed has all the elements of natural wood, plus the advantage of having no grain or cross grain. This is a distinct advantage in a toilet seat as removes the possibility of cracking or splitting. The core consists of a solid compact unit made engrain. This is a distinct advait removes the possibility o The core is laminated, 3 ply.



where both core and covering are of uniform resiliency, shock absorbent, flexible to torsion, tough, hygienic and indestructible.

Church Sani-Black Seats are acid resisting, mois-In combining the core and rubber covering we have produced a seat that has no joints or seams; a seat Important Hinge Feature

ture proof, and attractive in appearance.



No. 14 Church Sani-Black full saddle seat and cover for regular bowl, with black molded hinge.

No. 14 Church





No. 57 Church Sani-Black open front full saddle seat, no cover, with heavy nickel plated bowl.

No. 19C Church
No. 19C Church Sani-Black
open front full saddle seat with
sanitary cutout back, no cover,
for extended lip bowl. Black
molded check hinge.

No. 17C Church

No. 17C Church Sani-Black
open front full saddle seat with
sanitary cutout back, no cover,
for regular bowl. Black moided
check hinge.

NATIONAL BUILDERS CATALOG

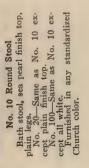


Bath stool, sea pearl finish top, plain legs and braces.

No. 22—Same as No. 12 except plain finish top. No. 12—Same as No. 12 except pearl finish top, legs and braces.

No. 130—Same as No. 12 except pearl finish top, legs and braces.

No. 120—Same as No. 12 except all white has no standard in any standard. No. 12 Oblong Stool



mended for factories, office buildings, public build-Where Used-Church Sani-Black Seats are recom--in fact, any ings, department stores, steamships place where abuse must be expected.

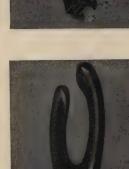
sert which is molded into the core under 108 ton hydraulic pressure. The hinge is attached to the seat by means of heavy machine screws which are gripped by these threaded inserts, as shown, making it impos-Important Hinge Feature—An important hinge feature of Church Sani-Black seats is the solid steel insible for the hinge to loosen or the screws to pull out. Guarantee-The C. F. Church Mfg. Co. guarantees Church Sani-Black Seats and Covers and will furnish new seats and covers free of charge, in exchange for any that might break, split, crack, scale, or craze.



No. 2200 Church No. 2200 Church Sani-Black seat and cover for regular bowl, with black molded hinge.

No. 56 Church

No. 56 Church Sani-Black
full saddle seat and cover, with
heavy nickel plated brass hinge,
for regular bowl.





No. 5300 Church
No. 5300 Church Sani-Black
open front and open back full
saddle seat no cover for extended
lip bowl. Black molded check
hinge.

ANACONDA BRASS AND COPPER

Manufactured by THE AMERICAN BRASS CO.

WATERBURY, CONN.

Offices and Agencies in All Principal Cities

DIZED COPPER TUBES. 85 RED-BRASS PIPE; ANACONDA DEOXI-ANACONDA 67 BRASS PIPE; ANACONDA

For Anaconda copper in Sheets, Rolls

and Strips see page 150.

Reasons for Using Brass Pipe

Today, plumbing pipe is generally concealed behind walls and under floors, making repairs and replacements exceedingly costly. The necessity for durable pipe, properly installed, is evident.

assures a full flow of clear water, upstairs and down, as flow is gradually reduced to a thin trickle. This can never happen with Anaconda Brass Pipe. It cannot rust, and water becomes discolored, and as rust accumulates the When metal that rusts is used for plumbing pipe the

well. Sooner or later rustable pipe will become entirely clogged with rust—or worse will rust through and leak. The use of Anaconda Brass Pipe eliminates the possibility of water damage due to rust leaks. It is actually a "dollars and cents" economy because it serves, rustlong as the building stands.

Rust is not only an annoyance, but a big expense as economy because it serves, rust-

perience and through Anaconda's extensive national advertising campaigns. Permanent plumbing has become an important factor in the building and selling of homes. These are facts which the public is learning from ex-

will not give the same satisfactory service under certain conditions. Realizing this, The American Brass Company 18 years ago undertook the most thorough, scientific study ever made Brass pipe will outlast rustable pipe under any water indition. But, it is also true that all kinds of brass pipe of plumbing pipe.

As a result of this exhaustive research Anaconda 67 Brass Pipe is recommended for normally corrosive water, and Anaconda 85 Red-Brass Pipe for highly corrosive cal Department will gladly cooperate in determining the water. If there is any doubt as to the correct Anaconda Alloy to use under any local water condition our Technipipe to specify.

Anaconda 67 Brass Pipe

not of high permanent hardness. Under such conditions, where the extra protection of Anaconda 85 is not necessary, Anaconda 67 can be installed for both hot and cold lines in the many localities where normal water conditions water lines with every assurance that it will reflect last-ing credit upon the builder who used it. lowlands along river beds, and where filtered waters are sources, shallow wells, tubular wells or filter prevail; that is, when waters are not drawn from peaty This brass pipe alloy is recommended for distribution galleries in

Specifications for grade B pipe.
per, is semi-annealed, seamless urally sound and physically perfect. Anaconda 67 Brass Pipe meets U. S. Government seamless and guaranteed struc-It contains 67° % cop-

Anaconda 85 Red-Brass Pipe

ANACONDA is the highest quality corrosion-resisting of Anaconda 85 Red-Brass Pipe substanpipe commercially obtainable at moderate tiates laboratory results, indicating that this The perfect condition of all installations

Also for underground service lines with threaded fittings tribution lines carrying ground waters and colored surface waters, particularly when drawn from sources of peaty origin, and mechanically filtered waters which may be high in carbonic acid content and low in alkalinity cost. This pipe is unqualifiedly recommended for dis-

of the U.S. Government Specifications for grade A pipe. It contains 85% copper, is semi-annealed, seamless and guaranteed structurally sound and physically perfect. Anaconda 85 Red-Brass Pipe meets every requirement

Anaconda Deoxidized Copper Tubes

installations, industrial piping, etc. other underground lines, sprinkler systems, oil burner improves the physical qualities and corrosion resistance. Tubes are made from specially deoxidized copper which and makes for low installation cost. Anaconda Copper of the flexibility of this material, eliminates many fittings 45 to 60 ft. The use of long lengths, possible because fittings are available in sizes from 1/8 in. to 2 in. in straight These tubes are advantageously used for service and lengths of 20 ft. and in sizes from 3% to 1 in. in coils of Deoxidized Copper Tubes for use with compression

Anaconda Products Fully Guaranteed

to be structurally sound and physically perfect Every length of Anaconda Brass Pipe is guaranteed

Permanent Identification

designating the kind of pipe are rolled in the metal every n identification. In addition, a label is applied to every length. The trademarks "67" and "85" are registered 12 inches. This method of marking affords permanent The name "Anaconda" and the numerals "67" and "85" the United States Patent Office.

Sizes and Deliveries

extra heavy. Special commercial sizes and gauges made to specifications. Pipe are made in standard pipe sizes, both regular and Anaconda 67 Brass Pipe and Anaconda 85 Red-Brass

bury and Torrington, Conn., Buffalo, N. Y., Detro Mich., Kenosha, Wis., New Toronto, Ontario, and the mills of The American Brass Company in Watersold through leading plumbing supply houses everywhere Anaconda Brass Pipe is manufactured and stocked at

PLUMRITE BRASS AND COPPER PIPE

Tubular Plumbing Supplies

Manufactured by BRIDGEPORT BRASS COMPANY

BRIDGEPORT, CONN.

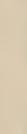
BRANCH OFFICES AND WAREHOUSES (*)

NEW YORK, N. Y., Farmers Loan & Trust Building BOSTON, MASS., 1060 Park Square Building PHILADELPHIA, PA., Bankers Trust Building *NEWARK, N. J., 325 Jelliff Avenue *PROVIDENCE, R. I., 70 Clifford Street

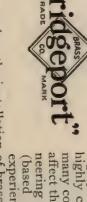
an & Trust Building
ure Building
BUFFALO, N. Y., 623 Genesse Building
rust Building
CHICAGO, ILL., 2016 Palmolive Building
use
treet
DAYTON, OHIO, 1327 Third National Building
LOUISVILLE, Ky.—428 Inter-Southern Bldg.

Products

PLUMBING SUPPLIES. PLUMRITE BRASS PIPE, PLUMRITE COPPER WATER TUBE, BRASS, BRONZE AND COPPER TUBE, AND TUBULAR



pipe sometimes call for a variation in mixture. Sometimes unusual stiffness is required—at other times bend-In principle, all brass pipe is good, and is the only modern conveyance of pure water. The uses of brass "Plumrite" Brass Pipe



ing qualities. A few localities have highly corrosive water, and there are many conditions which in theory may affect the life of brass pipe. Our Engineering Department will give advice (based upon over half a century of

We shall be glad to send a copy of our new booklet giving our experience with the different brass pipe mixtures over a period of 50 years. experience) to anyone interested in the installation of brass pipe for any specific locality.



The standard brass pipe for the average installation, for both hot and cold water lines. The mixture is Muntz metal which is 60% copper and 40% zinc. For upwards of fifty years "Plumrite" Standard brass pipe has established is recommended for all general use. lished an unmatched record for trouble-free service, and



Standard offering corrosion-resisting qualities better than "Plumrite" 67%. "Plumrite" 67% contains 67% copper and 33% zinc. In general use, however, we have found "Plumrite"



corrosive inland waters, as well as for underground lines. conditions, such as on salt water lines and for specially This mixture of 85% copper and 15% zinc has a high copper content imparting a reddish tinge to the metal. It is recommended for use under very severe corrosive



"Plumrite" Copper is recommended as the highest quality that can be produced. 99.96%. This pipe is pure copper, showing an analysis of 96%. Where conditions demand a pure copper pipe,

Bridgeport Tubular Plumbing Supplies

Basin Supply Pipes, straight, angle, and Basin Waste, straight

Bath Supplies, straight
Bath Supplies, 45° offset
Bath Supplies, 90° offset
Connected Bath Waste and Overflow,

for semi-concealed work
Connected Bath Waste and Overflow,
for concealed work
Extension Tubes
Elbow, Slip Joint
Faucet Hole Cover
Flanges, Heavy Saw-tooth Pattern for open work Connected Bath Waste and Overflow,

Nuts, Slip Joint, Wrought, I.P.S. P. O. Basin Plug with Slip Joint Tail

Piece
P. O. Basin Plug, for lead connections
Reducer Couplings
Sink Connections, one piece
Sink Plugs, Patented
Sink Plugs, Tail Pieces
Shower Arm, offset
Sink Strainers, Flat Rim
Stops, Wheel Handle
Tank Bends, Low Down
Tank Connections, Straight
Tank Supplies, Low Down
Traps, Wrought, 1½" Plain P Double
Slip, with 1¼" inlet P Double

Traps, Wrought, 1½" Plain P, with 1½" inlet
Traps, Wrought, 1½" Plain S
Traps, Wrought, 1½" Plain S, with 1¼" inlet
Traps, Wrought, 1½" Plain S, with 1½" inlet
Traps, Sink, Wrought, 1½" vith Cast
Outlet Elbow
Traps, Sink, 1½", with 1½" inlet Traps, Wrought, 1½" Plain P Double Slip, with 1½" inlet Traps, Wrought, 1½" Plain P Traps, Wrought, 1½" Plain P, with 1½" inlet Traps, Wrought, 1½" Plain P, with 1½" inlet

We shall be glad to send a copy of our complete Plumbing Supply Catalog to responsible wholesalers, engineers, or plumbing contractors.

WATER SOFTENERS AND SYSTEMS

Made for CRANE CO.

836 So. Michigan Ave., CHICAGO, ILL.

For Bathroom Fixtures See Pages 223-228

Perhaps as important advances as have

been made in the plumbing field are

The first puts the many benefits of soft



The S. A. 22

of great interest not only to the public but to

contractors, dealers, and speculative builders.

Both these improvements, opening new

Both the softener and brine tanks of this semi-automatic softener are made of corrosion resisting cast iron. A single control valve makes operation so easy that it can be cared for by any member Crane-Warlo of the household.

Crane-Warlo Water Softeners

Long study has brought the care-C W 40 softening mineral to an passing water of any degree of hardness through a bed 40 softening mineral to an extremely high state of efficiency and an unlimited durability. The mechanical parts have been planned to give Crane-Warlo Water Softeners function simply by fully prepared Doucil C of softening mineral.

the greatest convenience and a lifetime of service.

All that is necessary for anyone to have soft water efficiency through a salt wash, which is termed regenera-tion. Outside of the brief time needed for regeneration, no attention is required. The Electro-Matic eliminates is to hook a Crane-Warlo into the water lines, and occasionally afterward restore the mineral to its original even that; it regenerates automatically.

Crane Automatic Water Systems

22 feet and deep well for a lift up to 250 feet; and operate plumbing units which make running water available anywhere at the turn of a faucet. They are made in all sizes from 250 to 6,000 gallons an hour; in two types, shallow well for a vertical lift up to Crane Automatic Water Systems are self-contained by either electric or gas engine power. and capacities, pumping

Every Crane system is simple and durable. Parts are oversize for greater strength. Bearings are machined to .0005 of an inch. A wrench is the entire tool kit.

The 75-year Crane reputation stands behind every every Crane-Warlo softener. information regarding either. Or our experts will personally study any set of circumstances and recommend the proper size and type. A request will bring full Crane water system and

NATIONAL BUILDERS CATALOG

250 gallons an hour capacity.
42.gallon tank. 1/6 h.p. motor.
Other shallow and deep well
models, in many capacities, to
meet a great variety of conditions.

Shallow Well System No. 254-A



The second puts the advantages of

clubs,

eauty parlors, restaurants,

bottling works,

and industrial

The C. W. Softener

everyone can afford. Skill-luly designed and engineered, it tinotions pericetly and will stand up for many years. The cast iron tank is flanged at the top to provide easy access to the interior should that ever be necessary. Here is a water softener of Crane quality at a price that everyone can afford. Skill-fully designed and engineered,



The Electro-Matic

Now, a softener as convenient as electric retriperation. A softener that saves the time and trouble ordinarily needed to watch valves during regeneration. When 100 pounds of salt have been used, a signal flag gives notice to refill the salt tank. There is a margin of five regenerations. Made in two sizes each, two types of control.

KEWANEE WATER SYSTEMS

SEWAGE DISPOSAL SYSTEMS, CENTRIFUGAL PUMPS Made by KEWANEE PRIVATE UTILITIES CO.

461 South Franklin St., KEWANEE, ILL.

KEWANE

KEWANEE PNEUMATIC WATER SUPELY SYSTEMS for Country Homes and Estates, Farms, Subdivisions, Golf Clubs, Country Schools, etc.

Kewanee High Pressure Water Systems

With a capacity of 225 gallons per hour the Kewanee No. 70 was designed and built to give users a true Kewanee system—dependable in every way—at a low price. It retails for \$75. Never before has it been possible to get a quality water system at such a low price. It is backed by

(Direct-from-Well Type)

Kewanee No. 70 Water System

the same broad guarantee we give our highest priced

The Kewanee Line has been recognized as the leader for 30 years. With a Kewanee System those beyond city water mains can have all the advantages of a plentiful supply of water all over the house, in the barns, for watering stock, sprinkling lawns—all under enough pressure to provide real fire protection likewise, and

200 Models and Sizes

In the Kewanee Line, consisting of 200 models and sizes, there is a water system for every need—for providing from 200 to 10,000 gallons of fresh, clean water per hour, from cistern, deep or shallow well, lake or river.

All Kewanee models have exclusive features that insure

bearings are reamed to perfect circles; shafts operation without any smooth, economical Gears carefully machine fussing or fixing. and pins are instance:

and ground to a mirror finish.

wanee Water Systems in use 8, 10, 15 years and longer have never had a dime spent on them for repairs or upkeep. Hundreds Kewanee Triplex Suction Pump, Silent Chain Drive. 1500 to 10,000 gallons per hour. Suction Lift, 20 Feet.

It starts and stops and runs so smoothly that when installed in a basement it can't be heard economical operation. It is entirely automatic and self oiling. insure very smooth and

priced system,

Many features, unusual for such a mod-

outfits.

Kewanee No. 70 Water System Direct-from-Well Type.

Automatic Electric Drainage Pump

Designed to meet the demand for a small, compact, light-weight, high efficiency unit for draining basements, elevator and boiler pits, ditches, excavations or any flooded place.

No attention is necessary as it is positive and automatic in its operation which is governed by a copper float that starts or stops the pump as the water rises or recedes in the pit. Nothing to get out of order and every part is well protected.

solid matter getting into the pump so there is no clogging. Absolutely noiseless and easily portable. Connects to ordinary light socket.

Centrifugal Pumps

A double strainer prevents any

driven by direct connected motor, gasoline engines or by belt from outside power. Kewanee Centrifugal Pumps in-clude open and closed impeller bilge pumps, cellar drainers and deep well turbines. They may be They may be types, single and multi-stage units,

sewage is automatically reduced to a liquid form and automatically delivered to the tile disposal field where aerobic bacteria, ever present in surrounding earth, reduce it to a harmless state.

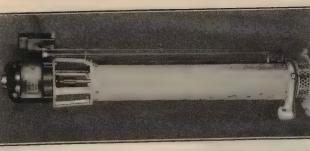
The sketch shows a Kewanee Sewage Disposal System, with the tile disposal field, and also the compactness of a Kewanee Water System completely installed in a basement. The Sewage disposal systems are so designed that the

Sewage Disposal Systems

Write for Helpful Bulletins

Separate and complete bulletins are issued for the various Kewanee These will prove very helpful. Write for them.

lems for many years. This service is at your disposal, without obligation. Our complete engineering de-partment has been helping solve water and sewage disposal prob-



Kewanee Automatic Electric Drainage Pump.

Compact Efficiency of Kewanee Installation.

Any contractor with a set of Kewanee Sewage Disposal System castings and Kewanee blue prints can install one of these systems as successfully as the thousands of others that have been in operation for years.

Myers Junior Self-Oiling Direct Water

MYERS WATER Made by THE. SYSTEMS AND PUMPS F. E. MYERS & BRO. CO.

Agencies in All Principal Cities ASHLAND, OHIO ESTABLISHED 1870

Myers "Honor-Bilt" Products

Well, House and Cistern Pumps, Tank Pumps, Pump Stands and Pumping Jacks, Hand and Power Water Sys-DERS AND ACCESSORIES TEMS, SELF-OILING POWER PUMPS, CYLIN-

OTHER PRODUCTS: Hand and Power Spray Pumps, Nozzles and Fittings, Auto Washers, Hay and Grain Unloading Tools, Barn and Garage Door Hangers, Store Ladders, etc., etc.

Water Systems and Power Pumps

Myers Self-Oiling Water Systems and Power Pumps are made in a complete line—for home, farm or country estate—summer cottage, camp, service station, hotel or golf course—school, church or hospital—mill, mine or factory. Whether the water supply source is deep or shallow—whether the outfit is to be operated by hand, wind, engine or motor—whether the installation is to be protected or exposed to the weather—there is a dependable Myers Water System or Power Pump for the purpose in capacity range from 200 to 10,000 gallons per hour.



Electric Water Systems Myers Self-Oiling Electric

Water Sy

tems are especially convenient. Powered by the home lighting and power plant or by current from high lines, they require little or no attention and are economical, thoroughly safe and efficient. Some styles are furnished with tanks, while others pump the water from the well or cistern direct to the faucets. Self-starting, self-stopping, self-oiling—complete automatic control—insures dependable and continuous water service for household use, for barns and feed lots, for sprinkling, machine washing and fire protection.

General Information

A few of the more popular types of Myers Self-Oiling Water Systems and Power Pumps appear on this and the following page. Contractors, dealers, plumbers and electrical equipment stores everywhere sell and install Myers Water Systems. There is one near you who will be glad to give you complete information and assist you in selecting a Myers System that will meet you individual requirements. See him by all means before you make a selection, or if you prefer write our Engineering Department for catalog and free advice.



Myers Self-Oiling V-Belt Drive Home Water Systems

Deep

For Shallow Wells or Cisterns

Automatically Controlled

Where not over 250 or 300 gallons of water per hour are needed for household, sanitary and other requirements, this is the ideal system. Low in price, easily installed, with a minimum of cost to maintain, the service it renders is within the reach of any home, farm, summer cottage or similar installation. Two sizes—250 and 300 gallons per hour—complete as pictured ready to install. Operation by city current or farm power lighting plant. Thoroughly reliable, efficient Fig. 2510



Fig. 2621-Patented

System.

Fig. 2510-Patented Myers Self-Oiling V-Belt or Si-

Myers Self-Oiling V-Belt or Silent Chain

Drive Deep

Well

Water System

lent Chain Drive Shallow Well

Water System

Automatically

Controlled

Automatically Co Fig. 2637

Controlled

A large capacity, self-oiling, automatic unit for wells or cisterns not to exceed 24 feet in depth. Two sizes—500 and 1000 gallons per hour. Design, construction and special features lend themselves to case of installation, simplicity of operation, dependability of service. An excellent outfit for public or private buildings, institutions, country especial control of the control

Fig. 2620-Patented Where a large volume of water is required from a source of supply beyond the depth of an ordnary suction pump, this system is exceptionally desirable. Complete as pictured (except down or suction pipe and lower cylinder), it is ready to be connected with water and power lines. Size and strength, the contraction of forestriction and power lines. lines. Size and strength, method of operation and automatic control, adaptation to a wide range of installations, economy of maintenance, high efficiency, make this system exceptionally desirable for any service up to 1000 gallons per hour.

NATIONAL BUILDERS CATALOG

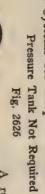
Fig. 2637-Patented

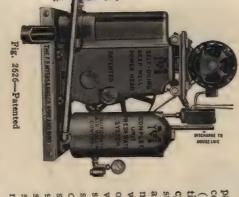
For Shallow Wells or Cisterns Fig. 2508

quire a storage tank. It pumps the water fresh and cold from source of supply Designed for operation by city current or by farm light water and power lines. Will provide an abundance tured, ready to connect to sizes—250 and 300 gallons per hour—complete as picand power direct to of water at an extremely This system does not refaucets or taps. plants. Two

low cost for homes, farms, summer cottages and similar places. Dependable as the day is long. Fig. 2508-Patented

Myers Self-Oiling V-Belt or Silent Chain Drive Direct Water Systems for Deep or Shallow Wells





cylinder), ready
Motor supply a Gem nozzle for sprinkling and similar service. A deep well size of cylinder. He sufficient volume for a complete as pictured (except down or sucpact ordinary needs and will or taps, capacity varies stall. Motor driven automatically controlled system of exceptional with depth of well and size of cylinder. Has no storage tank, pumps water direct to faucets rugged and comdeep well outfit ready to in lower suc-

Myers Self-Oiling Belt or Silent Chain Drive Direct For Shallow Wells Water Systems

Pressure Tank Not Required Fig. 2353

Fig. 2353-Patented

A proven outfit for homes, farms, country estates, public and private buildings and grounds, where the depth of well or cistern does not exceed 24 feet and the volume of water required not over 500 gallons per hour. Motor driven, automatically controlled, no storage tank, pumps water direct to faucets. Complete as pictured, ready to connect to water and power lines. Popular pictured, ready to connect to water and

> Myers Self-Oiling Power Pumps for Shallow and Deep Well Service—Continuous Operation Without Attention



2346-Patented

Myers Self-Oiling Power Pumps have been developed by pump experts of long experience. They represent a revolutionary advance in pump design which has created a new standard of power water service that cannot be compared with power water facilities

of but a few years ago.

Positive self-lubrication, housed working parts, larger valves, improved method of power application and other late features, improved method of power speed, increase the volume of water permit operation at higher speed, increase the volume of water over older types, reduce wear and breakage to the minimum, lower operation and maintenance cost and prolong service years.

They are designed for general service in all fields of human

endeavor

wells—with capacities up to ten thousand gallons per hourgive users the opportunity of selection for individual needs. The tens of thousands already in service is a wonderful testimonial of the general satisfaction Myers Self-Oiling Power Pumps are giving those who depend on them for their daily water supply.

Myers Self-Oiling Power
Pumps can be installed anywhere. They are equipped complete with motor for either belt
or chain drive or are furnished
without motor for engine, belt,
gear or chain drive. When desired they are provided with an
air valve or air cylinder for use
with pressure tanks. They meet
depth, volume, motive and -five sizes for deep

depth, volume, motive and maintenance requirements. And whether used for home or farm or for school, college, hotel, mill or factory, they give unvarying satisfaction. Our Engineering Department solicits, without obligation on your part, the opportunity to help solve

Myers Door Hangers your water problems. Stayon and and Tubular styles for sliding doors on barns, sheds and other buildings—Catalog and information



NATIONAL BUILDERS CATALOG

Continued on next page

AUTOMATIC ELECTRIC SUMP PUMPS

and Automatic Cellar Drainers

Copper and Bronze Construction Throughout

Made by PENBERTHY INJECTOR CO.

DETROIT, MICH. blished in 1886

CANADIAN PLANT: WINDSOR, ONTARIO

Penberthy Automatic Electric Sump Pumps

tems, there are numerous In spite of our efficient municipal sewerage sys-

TRADE MARK mulates by seepage, overflow, flood or the sewer is not deep enough or because obstacles intervene between the backing up, that cannot be drained off directly, either because the flow line of places where water accusump and the sewer.

Model R Sizes 1 and 2

> rooms, settling basins, flywheel and elevator sumps, may be mentioned the cellars of resiwhere the sewer line is above the base-Among the more common instanc ment floor level or deep cellars dences where no sewers exist, tunnels, and scale pits. boiler buildings,

While ordinarily this seepage may amount to only a small trickle, its flow is continuous and if neglected the accumulated water soon becomes a real menace to health and property.

To keep such places dry, the incoming water is most economically disposed of as it accumulates, either by an automatic cellar drainer (water or steam operated) or an automatic sump pump (electrically operated). Local conditions determine which is preferable.

Penberthy manufactures a complete line of both types, and can consequently supply the unit best suited to meet

Conditions favoring the electric pump are:

1. For districts where city water pressure is not available, or at least very low.

Larger quantities of seepage water to be handled.
 Discharge heads up to 20 feet.

4. Low cost of operation.

List Prices, Sizes, Pipe Connections, Capacities, Etc.

Weight Boxed Lbs.		89	102	128	144	105
Size Motor H. P.		1/6	17	77	1/4	17
Operating Cost		0.8	1.6	1.6	1.6	1 6
	ZOIT.	-	009	009	009	KON
Capa Aga ead	TOIL.	200	1500			
er Hr	JUIL,	750	2000	2000	2000	COOC
Height Approximate Capacity of Gallons per Hr. Against Pump Discharge Head of	O IT.	1200 1000 750	2500	3000 2500 2000	3000 2500 2000	CARON
App Gall D	I EU.	1200	3000	3000	3000	2000
Height of Pump	In.	163	7 1/4	9	9	10
He Pu	2 1	3	3	25	-	c
Pipe Sump Con-Depth nec-Feet		2	7	4	9	01/
Pipe Con- n ec-	OF CARE	-	1 3/4	1 1/4	1 1/4	1 1/2
size List		\$65.00	85.00	3G 100.00 1 1	125.00	160 00
No.		16	26	3G	16	2

3 130.0011 % | S Sump Cover

List Price A sump cover is recommended to exclude ashes, coal dust and other solid material from accumulating in sump. Penberthy Sump Pump covers provide proper working clearance for the

NATIONAL BUILDERS CATALOG

Penberthy Automatic (Water Operated) Cellar Drainers



Table of Capacities at Different Pressures and Elevations, Pipe Sizes, Etc., Model "R"

Model Supply Discharge No. 1 Model % inch 1 inch	Head in Feet 3	100 Pounds Water Pres 10 15 20 25 30 40 60 80 210 300 340 460 510 700 90 140 240 300 370 90 140 210 300 370 100 140 240 300 370 90 160 210 330 480	300 Po	unds		T. T. T.		Maximum Net Capacities from
½ inch	Feet 6	10 15 80 210 90	300	1	Wat	er Pr	Sump in Gallons per Hour at 10 to 100 Pounds Water Pressure	2
% inch	20021	80 210	300	25	30 4	09 (0		1000
½ inch	902	8	4401	3404	00 51	0 700	720	
% inch	12 9	_	140	2403	00 39	0 57		069 0
	12		8	150 2	10 33	0 48		
				1001	50 22	0 39		
	25			-	90 19	0 30		
	18	_			12	0 25	250 320	
	3	190 390 550 620	550		750 01	0 118	180 1240	0 1220
No 2	9	210	210 340 420	120 6	600 75	0 102	-	<u> </u>
Model 3/ inch 17/ inch	6 4.	_	210	300 3	80 54	06 0	060100	
74 111011	12	_	. 4	210 3	00 42	0 78	102	0 11
-	15	_		7	210 370 57	0 57	0 640	0 1050

Unless otherwise specified, the model "R" drainer is supplied and used for all conditions as printed in bold face type as shown in the table of capacities (see table above).

The model "R" drainer requires 5-pound water pressure or more for each one foot of elevation, while the low pressure drainer will work on 2-pound to 4-pound per foot of elevation, which we can supply from factory. For conditions below bold face type we furnish a low pressure drainer.

Water Consumption-Model "R"

ire Water Re-	80 lbs. 100 lbs.	.30 .38 .40 .40	
Approximate Gals, or Fractional Gals, of Pressure Vquired to Pump One Gal. from Sump with a Model "	rô.	088.2	.70
nal Gals. Sump wit	40 lbs.	.35	1.00
Fraction al. from	30 lbs.	86. 03.	1.20
Gals, or	20 lbs.	.40	s below we can Drainer
roximate d to Pum	15 lbs.	.90	conditions face type
App	10 lbs.	.80	For co bold fa furnish
Working Head in	Feet	6.	12. 15. 18.

\$25.00 \$40.00 \$55.00 \$80.00 \$110.00 Model "L" List Prices-Model "R" and Model "L" Model "R" Size No. and Model

Capacities, etc., for Model "L" furnished on request.

Ask for blueprints of larger systems up to 10,000 gal.

SAN-EQUIP SEWAGE DISPOSAL SYSTEMS

241

SYRACUSE, N. Y. San-Equip Systems are distrib-uted by all leading wholesale plumbing supply dealers.

Made by SAN-EQUIP, INC.

Warehouse stocks of popular sizes are carried in principal trade centers.

San-Equip Filter Pipe \and ame Equip

An improved, unbreakable drainage

pipe designed primarily for increasing septic filter field efficiency. Made of 16 gauge copper-bearing iron, rust-proofed by mineral asphalt. 12 to 20 times more seepage per foot.

No. 429—Carton of ten 2-ft. lengths of 4" pipe, ea......\$5.00
No. 425—Carton of two 2-ft. lengths unperforated pipe and 4
single Y fittings, ea.......\$5.00

sewered home or camp depends upon

the careful installation of reliable

Safe sewage disposal for your un-

SAN-EQUIP WATERLESS TOILET SYSTEMS

A Complete, Certified Disposal System

SAN-EQUIP SEPTIC SYSTEMS. SAN-EQUIP SIPHON SEPTIC SYS-

Products

equipment. Quality and dependability

are more important than any other part of the unsewered plumbing job.

San-Equip Drain Pool

San-Equip now offers a complete

protection and increases operating efficiency. The San-Equip Septic, proven

dependable by thousands of satisfac-

disposal system that gives maximum

A scientifically designed seepage pool for use where drainage area is limited and there is no danger of water supply pollution. Easily installed at a saving in cost over ordinary pool.



No. 240 DP—the complete pool. Made of 14 gauge asphalt coated, copper-bearing iron. 240 gal. capacity...\$20.00 No. 120 SDP—a single section to be added as required to Drain Pool to increase capacity. 120 gal.....\$8.00

certificate of approved equip-It is proof of dependable disposal and a permanent

ment.

record of the installation.

to provide a unified system.

San-Equip Siphon Septic System

Intermittent d i s-charge to filter field assembled -- easily An improved systic process with terial as San-Equip tem combining sepsiphon discharge. improves disposal. Made of same ma-Septic. Completely installed.

SHANNEL IRON

reinforced construction around top-set in collars with

stop lug-full partitions. San-Equip Septics are made of special rust-

mendations. Now improved by more liberal baffles-

Made following U. S. Public Health Service recom-A scientifically designed, two-chamber septic tank.

The San-Equip Septic Tank

Sizes and Ratings of San-Equip Siphon Septic Systems

DEEP 8 WIDE

iron, rust-proofed inside

and out by a heavy coat-

ing of mineral asphalt.

resisting copper-bearing

Tanks of 500 gal. up are

horizontal type systems.

LANGED BASE

Sizes and Ratings of San-Equip Septic Tanks

No. of People

No.

	N	No. of People	People	Dimensions	Weight	Price
No.	Gal.	Home	School		Pounds	
		1	4 6	13	400	\$ 76.00
3	240	- 0	13	1,0 × 4,02	405	112.00
20	350	77	67	4 1	605	156.00
7	550	25	30	4 1	1075	106.00
710	750	40	5,5	27 × 10	1375	272.00
2	1125	70	110	32 × 13	7475	368.00
0	1500	92	155	00 X 11 0	2075	448 00
10	1875	115	200	09 X 14 /	2475	528 00
0	2250	140	245	00' X 1/0	2016	00.075
v	2625	170	290	607 x 709	2000	200.000
2	0000	101	330	60" × 23'4"	4325	088.00
0	3000	193	020	112/90 - 1/09	4775	768.00
10	3375	077	2/0	2000	2002	840 OO
	3750	250	410	.7.67 × .69	6776	040.00

Blueprints of systems up to 10,000 gal. on request.

San-Equip Improved Waterless Toilet

Where running water is not available, install a San-Equip Waterless Toilet; catalog sheet on request.

EXCELSO FUELLESS WATER HEAT

Made by EXCELSO PRODUCTS CORP

Division of AMERICAN RADIATOR CO.

83 Clyde Avenue, Buffalo, N. Y.

Branches in All Principal Cities

Products

coil and permit the effective utilization of WATER HEATERS which replace the EXCELSO INDIRECT AND DIRECT fashioned troublesome fire pot the boiler and furnace fire

in new buildings or old, by any plumber or steamfitter. celso Water Heaters are self operating and require absowater supply for all tap needs at practically no cost. lutely no attention. They are easily and quickly installed Excelso Heaters will provide a constant, uniform hot large apartments, hotels, office buildings and factories, tor the heating of the domestic hot In any size building from a cottage to AND KLEARWAY VALVE Ex-

for use with hot water or warm air systems. for use with steam or vapor heating plants, and direct, Excelso Water Heaters are made in two types: indirect,

cleaning valve for hot water supply or heating systems. It eliminates several valves usually installed. EXCELSO KLEARWAY VALVE—a simplified two way

Excelso Indirect Water Heaters

of piping hot water as long as the boiler is being fired. coil and into the storage tank. The tank is always full the copper coils in the heater, in turn heating the dostorage tank, as shown in the illustration at the right. between the steam or vapor boiler and the hot water Water from the heating boiler circulates downward over How Used-Excelso Indirect Heaters are attached water supply which circulates up through the

being heated comes in contact only with the copper clusive Excelso feature. The use of this special type thus doing away with the chief cause of leakage found in other heaters after a few years' use. The water of connection eliminates the necessity for gaskets, cover plate and a heavy duty removable copper coil uncontaminated by rust. coil and brass connections. It therefore remains free and with patented ground joint brass connections, an exheavy, self-draining cast iron shell, with removable Special Features-The Heater itself is made up of a

used in any type or size of building where there is a practically no building is too large to have its domesof them in use today in all parts of the United States steam or vapor heating plant. There are over 700,000 twenty and thirty story buildings, in apartment hotels tic hot water needs efficiently cared for by one or more Excelso Indirect Heaters. They are in use today in Where Used-Excelso Indirect Heaters can be It has been proven conclusively that

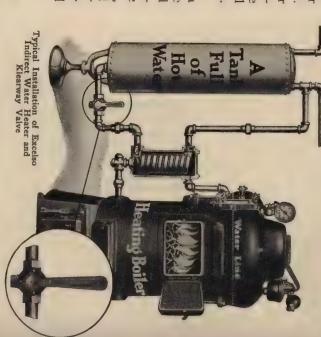
outlets located the farthest away is always piping hot, even at the in buildings covering entire city housing several hundred families, from the heater. blocks. In every case, the water

or round, plain or jacketed. boiler, new or old, whether cast iron or steel, sectional equally satisfactorily on any type of steam or vapor Excelso Indirect Heaters operate

hot water radiation. Excelso Heaters are also used extensively for heating

thruout the country indicates that Excelso provides of thousands of Excelso Indirect Heater installations hot water at the lowest possible cost. Practically No Operating Cost-A careful check-up

are made in four types and seventeen sizes, providing celso Heaters in battery. provided for by the installation of two or more Exgallons in single units. Unlimited capacities can heating capacities for tanks ranging from 30 to 2000 A Size For Every Need-Excelso Indirect Heaters



from the system. It offers a new safety feature, as with it, circulation is never blocked. It can be installed on high temperature replaces the two ordinary gate valves and draw-off cock formerly recommended for use on Excelso and other hot water heater installations, to provide the effective cleaning of rust and sediment This illustration shows an Excelso Indirect Water Heater installed with the new Excelso Klearway Valve. This single valve and accidentally left closed systems without the hazard which results if gate valves are used

NATIONAL BUILDERS CATALOG

Excelso Single Coil Indirect Heaters

= EXCELSO FUELLESS

Excelso Triple Coil Indirect Heaters Made in three sizes, with capacities of from 600 to

WATER HEATERS

celso patented ground joint brass conas removable copper coils and the Extwo fine quality brass unions as well Single coil heaters are equipped with small and medium size residences. of from 30 to 140 gallons, to care for Made in seven sizes, with capacities

Heaters may be used singly or

ly tor large apartments, small 1000 gallons, designed especial

notels, hospitals, garages, etc.

in batteries of two or more.

Dimensions, List Prices and Capacities

35

36

37

nections. Dimensions, List Prices and Capacities.

30 66 | 100 | 120 | 140 \$60 19% \$70

Tank Capacity

Excelso Double Coil Indirect Heaters

capacity, designed to heat water in very large apart-

Excelso Dual Coil Indirect Heaters

Made in three sizes of from 1200 to 2000 gallons

practically any quantity of hot

ing stations—in fact, Dual Coil Excelsos will furnish ments, hospitals, hotels, swimming pools, auto wash-

ties of from 160 to 420 gallons, intended for dences, etc. apartments, Made in four sizes, with capaciinstallation in small stores, large resi-

two or more.

- 1000		
Length, in	Size	Dimensions, List Prices
12 ½ 9 1 ½ 6.5 \$120 160	25	
15 9 2 11,5 70 \$150 220	26	and
19 9 2 11/2 90 \$180 300	27	Capacities
23 ¼ 9 1 ¼ 100 \$210 420	28	Ç

Dimensions, List	, List Prices	and (Capacities	ça
Size	25	26	27	28
Length, in	121/2	15	19	231/4
Shell Openings, in	1.3	60	~	12
Coil Openings, in	1 1/2	1 1%	1 1/2	11/2
Weight, Crated, Ibs	65	70	90	10
List Price	\$120	\$150	\$180	\$21
Gals. Tank Capacity	160	220	300	420

Openings, in... Openings, in... tht, Crated, lbs. Tank Capacity

stalled singly or in batteries of water desired, as they may be in-Dimensions, List Prices and Capacities.

EXCELSO DIRECT WATER HEATERS

Excelso Fin Pin Heaters

ening of the fire. Especially satisfactory in soft lon tank capacities. coal fired heating plants. unit and allow air passage which prevents deadbrass and galvanized iron in 30 and 40 gal-The fins prevent clinkers forming around the Installed directly into the bed of the fire. Made in cast iron,



Excelso Fire Pot Generator

Installed above the fire level. Does

for this purpose.

than fire pot pipe coils which have been widely used

provide maximum heating surface. A great deal more

Scientifically designed to

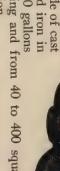
satisfactory, more economical and more permanent

or warm air furnaces.

Made in three types and a variety of sizes, for installation in the fire pot of hot water heating boilers

tors, or both. Placed in the furthe way of the fire. Made of cast water supply nace or boiler, above and out of

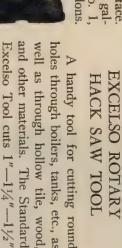
iron, brass or galvanized iron in six sizes from 30 to 250 gallons capacity for water heating and from 40 to 400 square feet of hot water radiation.



available.

tools, cutting up to 7" diameter, are

-2" pipe tap size holes. Special





Installation

Heating Contractors Everywhere.

Sold and Installed by Plumbing and

Availability

ator Manufacturers Everywhere. Wholesalers and Boiler and Radi-Stocked and Sold by Leading

AND KLEARWAY VALVE WATER HEATERS

Complete Detailed Catalog Mailed on Request.

Continued on next page

- BOILERS FOR GENERAL HEATING

BOILERS FOR GENERAL HEATING

Made by BURNHAM BOILER CORPORATION

IRVINGTON-ON-HUDSON, NEW YORK

BRANCHES

Boston (Cambridge), Mass., 195 Albany Street

Queens Village, I. I., 222nd St. & L. I. R. R. Toronto, Ont., Harbor Commission Bldg. Montreal, Que., 1410 Stanley Street Springfield, Mass., 153 Plainfield Street

CHICAGO, ILL., 1038 S. Kolmar Ave. SAN FRANCISCO, CALIF., 413-415 Tenth St.

PHILADELPHIA, PA., 108 Walnut Street BALTIMORE, Mb., 12 West Madison St. LANCASTER, PA., 704 Griest Building SHANGHAI, CHINA, 151 Avenue Foch

N. J.; LANCASTER, PA.; ZANESVILLE, OHIO PLANTS: IRVINGTON, N. Y.; ELIZABETH,

It's easy to see by the picture that very little heat

gets past this barrage of water backed metal, whether

fuel used is coal, oil or gas.

Features of the Burnham Water Tube Type are Double Shaking Grates, that can be shaken part at a

weather one part of the grate can be banked with time. Clearing the fire of ashes is easy, and in mild

ashes, while on the other part a fire can be kept going. Short Tie Bolts, to fasten the sections together, make for easier and quicker erection, and replacing Tested to 2½ times working pressure of 30 pounds, for water heating; five times its working pressure of

Ratings and measurements sent on request,

15 pounds for steam.

any section can be done without taking down the

whole boiler.

ROUND AND SQUARE SECTIONAL CAST IRON BOILERS for steam and hot water heating.

HIGH AND LOW PRESSURE BOILERS, for hot water supply.

General Information

Two Distinct Types of Burnham House Heating Boilers

1-Round Sectionals.

All Burnham heating boilers have the extra long fire travel that makes short fuel bills. With oil or gas as the fuel, this long fire travel baffles down combustion noises and gets a greater proportion of the heat from the long 2—Square Sectionals, of the efficient water tube type rushing flames.

Three Types for Hot Water Supply

1-High Pressure Burnhams, for large quantity requirements.

2-Junior Burnhams-for homes and business buildings.

3-Burnham Laundry Stove, for the average home



Burnham Water Tube Type Boiler with Jacket in Color

This Jacketed Burnham retains all the fuel thrift To which it adds the attractiveness of a sleek steel and heat generous qualities of the water tube type. Burnham Water Tube Type Boiler Jacketed in Color jacket, perfectly fitted and thoroughly insulated.

the tie bolts at the sides, and comes flush with the The only structural difference is in the base, which has been widened, so that the jacket fits down over

The Jacket is made of heavy steel, coated inside and out with heat and moisture proof enamels. The black. The enamel used is a special non-chip kind outside is in rich Venetian red, with base and front in that will not change color from heat or moisture.

surrounded its entire length by

rounded surfaces, that give the maximum area of heat

absorbing surface. long fire travel,

This Burnham boiler has the invariable Burnham

Water Tube Type, 17", 21", 27" and 36" Series

Burnham Square Sectional Boilers

Burnham Open Tube Type 27 In.

For Steam and Hot Water Heating

Insulation-Back, sides and top are insulated, under the jacket, with four ply air cell asbestos sheets, that will not absorb and hold dampness, as some forms of asbestos will

No bolts or rivets break the surface of the to leave its packing case, until all the setting-up work are hard to get at and do a lot of harm. The corners Two screws, one on each side at the top, are The lacket Goes On Last—The jacket doesn't need is done on the boiler. No chance of its being marred, nor of leaky connections inside the jacket, where they of the jacket are grooved to fit together without all the fastenings required. jacket.

Ratings, measurements and full descriptions sent on request.



Burnham Round Cast Iron Boiler

For Steam or Hot Water Heating Burnham Round Cast Iron Boilers

Outstandingly characteristic of this boiler is its ong fire travel, that lets no usable heat escape to the chimney. In addition to which are deep corrugations directly over the fire where the radiant heat is hottest, and the very complete way in which the fire is surrounded by water backed metal.

Owing to its sectional construction, it is simple to generous steam dome assures hot, dry steam at all times, and the extra large heat absorbing areas inside increase the capacity of this round Burnham. the boiler give it remarkable pick up.

has been studied and brought to the point of highest Every feature of control, both automatic and direct, efficiency. Grates are easy, to shake, and the lower draft door is at the side out of the way of the ash This boiler comes in 4 to 6 section sizes, and six grate areas.

tween all sections, and no inconveniently placed bolts thorough cleaning. All clean-out doors are in front. It is easy to keep clean, with clean-out doors beor other obstructions to catch your brush and prevent

Burnham High Pressure Boiler

For Hot Water Supply

other water tube type boilers. ing pressure; tested to 21/2 Similar in design to our It's good for 80 pounds worktimes its ratio working pressure, as provided in the A. S. M. E. Code.

Especially intended for hot water supply in apartment houses, office buildings, hospitals, stores, theatres, garages and similar buildings where much hot water is used.



Burnham High Pressure Boiler

Burnham Junior Boiler

For Hot Water Supply and Supplementary Heat

It's a small boiler that will do its work well on a small allowance of fuel; will require little attention; you can't do better than to install If your hot water requirements are and will last years without repairs. 175 to 700 gallons (tank capacity) this busy little worker.

brass water section; the latter for all brass hot water systems. Specify Made with either cast iron or brass if desired.





Burnham Laundry Stove

For Hot Water Supply Burnham Laundry Stove

For the average residence, requiring tank capacity of 80 gallons, this small stove is particularly designed. It burns little fuel and requires slight attention. May be automatically regulated, equipment being supplied when ordered. Top is 22 inches wide and opens up full washboiler width. Made with brass or cast iron water section; specify brass if desired.

Book on Heating

buy them. There's a Burnham Boiler for every heatinformation about Burnham Boilers and where to Write for our book on heating, together with full ing purpose.

NATIONAL BUILDERS CATALOG

Continued on next page

FITZGIBBONS STEEL BOILERS

Made by FITZGIBBONS BOILER CO., INC

General Offices: 570 Seventh Ave., New York, N. Y.-Works: Oswego, N. Y.

Branches and Representatives in Principal Cities

of any building from the small residence to the tems, and sizes to meet the heating requirements types for all kinds of fuel and all heating sys-ERS—a complete line of steel boilers with FITZGIBBONS COPPER STEEL HEATING BOIL.

all small and medium sized heating plants. homes, estates, churches, schools, garages, and -Ratings: 300 to 3,200 sq. ft. radiation, for FITZGIBBONS COPPER STEEL BOILERS, TABLE

FITZGIBBONS COPPER STEEL SMOKELESS BOILERS, TABLE 1-B—Ratings: 400 to 3,200 sq. ft. radiation, for the burning of soft coal smokelessly, in the small and medium sized heating plants.

FITZGIBBONS COPPER STEEL OIL FIRING BOILERS, TABLE 1-O—Ratings: 550 to 4,000 sq. ft. radiation, for oil, gas or stoker firing in the small and medium sized heating plants.

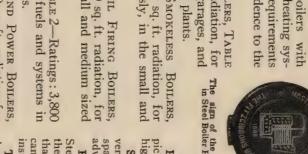
FITZGIBBONS STEEL BOILERS, TABLE 2—Ratings: 3,800 to 19,000 sq. ft. radiation, for all fuels and systems in the intermediate sized heating plants.

TABLE 3—Ratings: 4,200 to 36,000 sq. ft. radiation for all fuels and systems in the largest sized heating plants.

cost is truly nominal.

One-Piece Construction—Boiler comes to the job a complete unit ready to set in place. This simplifies installation and insures that the boiler will be as sound when installed as when it passed the exacting hydraulic test at the factory.

Circular grates eliminate dead corners and increase combustion efficiency because every square foot of grate surface is working all the time. Entire grate is visible which makes it easy to maintain a hot, uniform fire.



FITZGIBBONS STEEL HEATING AND POWER BOILERS,

Features and Advantages
Steel-Built Throughout—Made from the finest boiler steels obtainable, these boilers are strong and durable and give complete freedom from cracks, breaks and leaks. Maintenance

Cylindrical Design-affords strongest possible construction.



The sign of the BEST in Steel Boiler Heat.

tion chamber which gives the gases plenty of chance to burn before entering tubes. gas-deflecting arch just above the grate (an exclusive Fitzgibbons feature), and the high combus-Complete Combustion-is assured by the rear

gases are hottest, and the unusually positive water circulation. Because of these features Fitzgibbons Boilers pick up the heating load with exceptional combustion chamber, the effective single of the complete water-jacketing of the large vertical many small diameter Quick and Complete Heat Transfer-The result tubes concentrated

pick-up, substantial fuel savings are the rule, while records as high as 40% are not uncommon. Fuel Savings-because of complete combustion, and quick

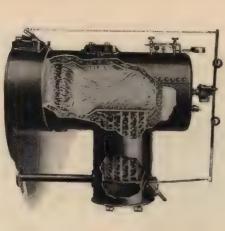
advantage. Space Saving—because of high efficiency these boilers are very compact for their capacities and therefore, require less In the modern cellar or boiler room this is a big

that every home and every small and medium sized building can have a heating plant that is on a par with the big, modern installations in steel heating boiler efficiency. they cost very little more than an ordinary cast-iron boiler, so Steel Boilers are moderately priced. In the residence sizes Reasonable Cost-With all their advantages, Fitzgibbons

full-off and full-on oil burning service and saves much fuel during starting-up periods. Steel gives the strength and duraflexibility that the intermittent operation demands. Quick-steaming characteristic is particularly valuable Table 1-O Particularly Suited to Oil Burning Service—Ample combustion space insures complete burning of the oil. ng folder on request. bility to withstand the greater intensity of oil fire, and the

Additional Information and Service

Complete information, including tables of ratings and dimensions, on any of the specific classification of boilers listed above under "PRODUCTS," or the Fitzgibbons Steel Heating Boiler Catalog describing the entire line, will gladly be sent on request. Also, our Engineers will be glad to aid in selecting the proper size and type of boiler for any specific heating load and any kind of titled in the service and type of boiler for any specific heating load that the service are the service and the service and the service and the service are the service and the service and the service are service as the service are service and the service are service as the service are service are service as the service are service are service as the service are service are service as th without obligation.



Fitzgibbons Steel Boiler-Table 1

NATIONAL BUILDERS CATALOG



Fitzgibbons Steel Smokeless Boiler-Table 1-B

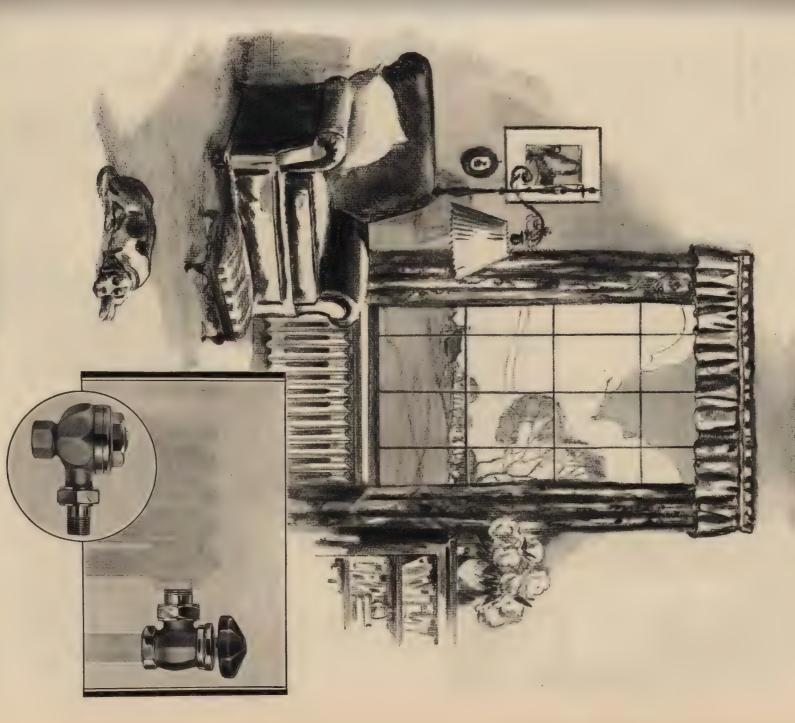


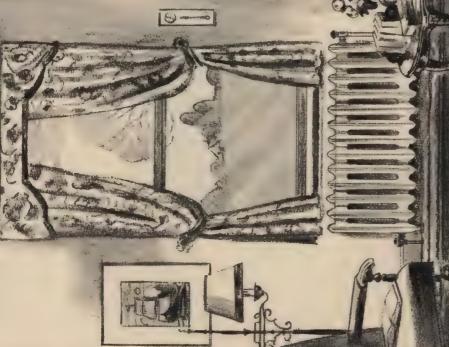
Fitzgibbons Steel Oil Burning Boiler Table 1-O

MARSH HOME EATING SYSTEMS

Made by JAS. P MARSH & CO.

2073 Southport Ave., CHICAGO, ILL.





tion of the complexities that are found in many systems of heating. It is extremely economical in -one that is most sensitive in adapting its heat output to the requirements of outdoor temperatures. There is no possible way of transmitting simplicity of design and construction and eliminaoperation because it is a perfected vapor system basement dust and dirt into the upper rooms.

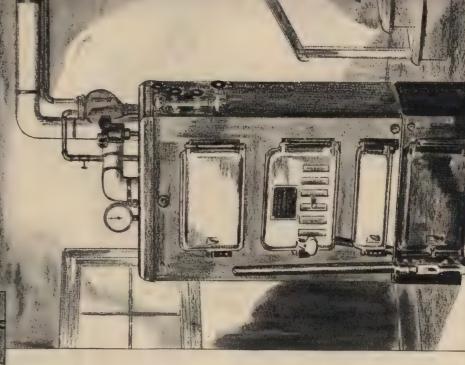
other system. It is low in first cost because of its

Vapor-filled radiators heat very quickly with a water-no consequent overheating during the demands are light or heavy, constant or fluctuating, the Marsh Vapor System can meet them with the minimum amount of firing. There is no waste of fuel due to the necessity of heating a large quantity mild days of spring and fall. Whether the heat utmost economy and efficiency.

A Heating System for Your Home

is most desirable for the average residence. Reor coal, radiators offer definite advantages in cleanliness, in beauty and in economy. It remains only gardless of whether the boiler is fired by gas, oil,

The Marsh Vapor System of Heating offers a combination of advantages that can be found in no



Continued on next page

- MARSH HOME HEATING SYSTEMS

Marsh Vapor System of Heating

Advantages of the

249

The Marsh Vapor System is a two-pipe system in which vapor steam is produced and distributed under very low pressure. Expressed briefly, its chief claim upon your consideration is this: it will generate heat for your home as it is needed to meet outside weather conditions and with utmost simplicity. There is no large tank of with a minimum amount of fuel, with maximum efficiency water to heat—the radiators become hot almost instantly.

The Marsh Vapor System possesses these essential

Economy of the MARSH VAPOR SYSTEM

qualities of a modern heating plant: flexible efficiency,

fuel economy and utmost simplicity.

Flexible efficiency enables the Marsh Vapor System to be operated in such a way that it can meet the sudden

variations in heat demands resulting from changing out-

door weather conditions.

The amount of steam delivered to the radiators can be further controlled through Marsh Radiator Valves.

These can be turned to 1/4, 1/2, 3/4 or full open position based on the need

cient steam to create a pressure in order to circulate heat On single pipe systems, it is necessary to generate suffi-

throughout the system. The incoming steam must force its way by the same pipe through which the condensate (steam turned into water by cooling) is expected to return to the boiler. As these two elements attempt to pass each other, a clanging pounding noise is created.

information send for Marsh Catalog Bulcomplete For

for a livable temperature within the This action automatically controls a sensitive damper regulator on the heating unit, closing or openroom. letin No. 100.

ing the drafts as weather conditions warrant. Automatic closing and opening of the drafts contributes to economy through fuel conservation.

bined with the efficiency of the low pressure principle as steam—assures economical operation throughout the year. This adaptability to outside weather conditions-coma source of heat as well as the decreased amount of fuel required to generate vapor steam instead of ordinary

> ance set up by the water, more pressure is required than is needed to produce the desired warmth within the build-

To force the steam to the radiators against the resist-

ing. The result is needless waste of fuel, loss of efficiency, unnecessary noise and a smelly, foul atmosphere produced from the radiator valve, the function of which is to relieve

the system of air. With the Marsh Vapor System, such

difficulties are entirely overcome.

quire a lower initial pressure to achieve circulation. They sign, and widen the application of the system to the most Marsh Heating System Units form the basis of simthe chief causes of inefficient heat distribution. They speed the passage of steam to the radiators and yet replified and automatic control. They positively eliminate make the system noiseless, assure the quality of safety, permit minimum sizes of piping, avoid complexity of deserious heating problems.

Efficiency Plus Beauty

ounces of steam instead of pounds of pressure. This is accomplished by shutting off atmospheric pressure from

the system through the medium of supply and return mains. Under these conditions, steam can be generated at a much lower temperature and delivered to the radiator

The operating principle of this system is based upon

The Operating Principle of the MARSH VAPOR SYSTEM Marsh Matched Radiator Units have added to their modern beauty. A hand-fitting Bakelite control wheel, two-tone finish of polished chromium give these vital units a distinction that is in harmony with the most modern home interior. The efficiency of any type of heating system employing steam or hot water can be increased proven mechanical excellence, a new quality-unusual operation, trim design and a lustrous, materially by using Marsh Matched Radiator Units. notably smooth

tem of piping and will function with equal efficiency re-Due to its remarkable efficiency, the Marsh Vapor Sysused. Installed in your home it assures you that proper, simple construction guarantees long life and reliable opit has been healthful temperatures will be maintained with the minimum of effort and the greatest fuel economy. Its sturdy, eration. It is easy to install, requires no complicated system has gained wide popularity wherever gardless of the type of fuel used.

> turned to the boiler in order to eliminate all interference and resistance to the vapor steam in its quick passage to

all the radiators in the system.

manner, water formed from the condensed steam is re-

Any air that may accumulate from the advancing steam

is quickly vented by traps located on the supply mains, on each radiator and on the return system. In much the same

ranging from several ounces to one pound without noise

or loss of excessive heat.

So rapid is the distribution of the vapor to all radiators

that the greatest efficiency is derived.

Because there is no resistance to air (atmospheric pressure) in the Marsh Vapor System, steam is produced at a relatively low temperature and is circulated at pressures

without resistance or noise.

as the cost of heating, depend very largely upon owner should acquaint himself with the basic ful comfort of the home than does the heating system. Cleanliness, beauty and comfort, as well the type of system selected. It is therefore of the importance that every prospective home It is a generally accepted fact that radiator heat No single factor contributes more to the healthcharacteristics of the most efficient and economical home heating systems. utmost

to select the best form of radiator heat.

RICHARDSON BOILERS AND RADIATORS

For Steam and Hot Water Heating

Manufactured by RICHARDSON & BOYNTON CO. SINCE 1837

260 Fifth Ave., New York, N.Y.—Utica, N.Y.

For Branch Offices, see Page 262. For Warm Air Heaters, see Pages 262-263

RICHARDSON SQUARE CASED BOILER

Color in the Home

Color is the keynote of the smart home today. Kitchen, bathroom, porch and now the cellar—all are brightened up by this charming new touch.

openings on the top of the boiler and horizontally at the return tappings so that they can be attached after all

The casings are cut in half from side to side at the flow

America, the magic of color in the home is here to stay. Introduced by noted builders and acclaimed by all piping connections to the boiler are made.

Cellar Modernization

Modernize your cellar with the gleaming blue of the "Richardson" Square Cased Boiler. Transform it into a play room, card room, billiard room, a den or any of a play room, card are part of the modern home. The it will retain its beautiful finish for years and years. Boiler can be kept clean as any piece of furniture and

The same features that have won so many friends for RICHARDSON & BOYNTON Co. apparatus are embodied in this latest product.

The square cased boiler is not a new heating experiment, but an improvement over a principle that is already successful.

The outer casing is finished with high luster blue japan that is durable, easy to clean, and will not crack or peel.

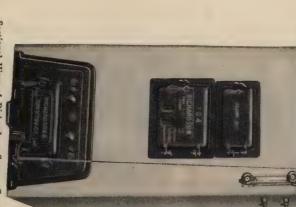
The doors, ash pit front and smoke box—in other

words, all cast iron parts not covered by the casing—are coated with black Japan.

Insulation

The lining or insulation of the Richardson boiler is of 1-in. 8-ply asbestos air cell and is attached to the cases when shipped. It thus cannot be damaged in transit or in handling.

The air space between the heating unit and the outer casing provides extra heat conserving insulation.



Showing round interior construction, extra air space insulation and heavy asbestos insulation on outer casing. Sectional View of Richardson Square Cased Boiler

	10 0 0 7 6 5 4 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	No,	d'S	
	350 550 650 650 900 1150 1150 1425	Rating, sq.ft.	Steam	
	1-W-1 1-W-2 1-W-3 1-W-4 1-W-5 1-W-6 1-W-7 1-W-8 1-W-9 1-W-10	No.	Water	
	550 675 850 1050 1350 1500 1700 1700 2100	Rating, sq. ft.	ter	
!	1.58 1.58 2.18 2.28 2.28 2.28 3.70 3.70 3.70	area, aq. ft.	Grate	Ric
	17 223 226 23 29	grate,	Diam of	Richardson Square Cased Boiler 1-S
	\$524868445 XXXXXXXXXXX	Water	Height o	uare Case
	2222222	Steam	in.	d Boiler
	48263233	line, steam, in.	Water	1-S and 1-W
	100000000	Smoke pipe, in.		W Series
	222222222 XXXXXX	Square of base, in.		
	11111111111111111111111111111111111111	Steam	Outlets, in	
	44444444444444444444444444444444444444	Water	ts, in.	
	2222200000 2122222222222222222222222222	Steam	To center	
	6.55555556 6.555556 6.55556 6.5556 6.5556 6.5556 6.5556 6.5556 6.5556 6.5556 6.5566 6.	in. Steam Water	ter of	

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	Serie
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	\$	No.	Ste
	575 650 650 950 1100 1200 1475	Rating, sq. ft.	Steam
	3-W-3 3-W-3 3-W-5 4-W-5	No.	Water
	900 1050 1400 1550 1750 1950 2175 2375	Rating, sq. ft.	ter
	1.97 1.97 2.64 2.64 4.28 4.28	sq. ft.	Grate
	22222235	grave,	Diam. of
	222222	Steam	Height o
	N. N. N. N. N. N. N. O. N.	Water	f jacket, n.
	282525252 XXX XXX	steam, in.	Water
	00000000	pipe, in.	Smoke
	222222244 2000011	of base,	Square
	44444 XX	Steam	Outlets
1 1/4	HARRE XX	Water	ets, in.
4/1	2352555 245655 245655	Steam	To cer
2/10	\$200000 \$4%\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	n. Water	To center of smoke pipe,

NATIONAL BUILDERS CATALOG

RICHARDSON ROUND SECTIONAL BOILERS

For Steam and Water

Scientifically Made

boilers on the market and will last a lifetime. hot water are made on the sectional unit basis, providing a large selection of sizes for every heating Richardson Round Sectional Boilers for steam and They are the most efficient and economical

scientifically staggered so there is no waste heat. fect" Revolving Triangular Grate Bars, which grind bustion and will last longer. The heating surface is and crush clinkers and eliminate one of the worst deep so that the fire can be run at a low rate of comfeatures of the home heating plant. The fire pot is Each boiler is equipped with the celebrated "Per-

> a large ashpit door, an entrance for the oxygen to the voir for heat and vertical self-cleaning flues. There is automatic damper regulator and on the water boilers with a ratchet. fuel and easily operated on the steam boilers with an There is a large water and steam space, a good reser-

perfect in manufacture and to maintain their ratings. And each Richardson Boiler is guaranteed to be

for fuel, increase the boiler one size. special bars for pea coal. When soft coal is to be used burning stove size coal, but can be furnished with Richardson Boilers are equipped with grates for



Steam-Front View



tions between
in Richardson
nade with extra
ne-cut cast-iron
into tapered



Water-Front View

Sectional Boilers-17, 20, 23, 26, 29 Series

174: 2004 2004 234 234 266 266 296	, ,	Size
350 425 550 650 900 900 1050 1150 1150 1150 1150	Steam Rating, Sq. Ft.	
550 675 850 1050 1350 1700 1700 1700 2050 2100 2300	Water Rating, Sq. Ft.	
29 20 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	T.	Diam.
9855855555555 485385555555555555555555555	In.	Steam Ht, Water
76665555555	Water	Height
55555555555555555555555555555555555555	Steam	it, In.
accommon and a second	No. & Size	Steam
accinentación acido de	No. & Size	Steam
Cancanacanaca La de	Return, In.	Water Tappings Flow and
100000000000000000000000000000000000000	. Pipe, In.	Diameter of Smoke

RADIATION RICHARDSON



Efficient Operation, Pleasing Appearance

Richardson Radiation is the result of a wide and popular demand for a radiator that combines high efficiencies experience and long effort to attain smart and graceful with artistic effect. It combines years of engineering styles that will blend harmoniously with any scheme of interior decoration.

of light tube design and high radiation efficiency, for winand recognition. It has filled the need for a wall radiator dow radiation that is unobtrusive and adaptable to untion line, has met with instant and widespread acceptance usual architectural arrangements, and for floor radiation in a wide variation of sizes and capacities with ultra-The result, as now illustrated in the Richardson Radiamodern smartness.

The new Richardson pattern is further especially desirtubular design thus making it possible to obtain wall radiation in exact footage requirements instead of in able because it combines push nipple flexibility with the units of 7 and 9 feet.





NATIONAL BUILDERS CATALOG



Richardson Six Tube Radiator 20 in. to 38 in. Heights



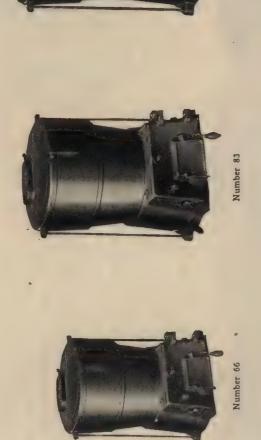
Richardson Seven Tube Radiator 14 in, to 20 in, Heights

RICHARDSON BOILERS AND RADIATORS

RICHARDSON SUPER-TEST FLAT TOP HOT WATER SUPPLY BOILERS

Tested to 300 lbs. Hydrostatic Pressure

Maximum Working Pressure 120 lbs.





Number 101





Data-Richardson Super-test Flat Top Hot Water Supply Boilers

Approx Shippin Weight Lb.	212 20 20 20 20 20 20 20 20 20 20 20 20 20	125 140 155 175	130 145 1135 1185 1205 205	2000 1180 1200 1200 1200 1200 1200 1200	165
Height Over- all, Inches	2003/4 20 22 22 24 24 24 24 24 24 24 24 24 24 24 24 24 24 2	207 207 222 223 243 243 243 243 243 243 243 243	242222222222222222222222222222222222222	2002 2003 2003 2003 2003 2003 2003 2003	283/8
Depth Water Section, Inches	W W O	w-w-0	ne neneo	NENEO A	32-
Grate Dia., Inches	22222	22222	22 2222	222200	10
Gal. Cap.	04 08 100 120	04980021 021	48 48 50 021	12001100	38
No.	41 66 83 101 121	41-B 66-B 83-B 101-B	41-L 66-L 41-T 66-T 83-T 101-T 121-T	41-TB 66-TB 83-TB 101-TB 121-TB	41-17 66-TL
	Flat Top—Open Base	Flat top with base bottom	Flat top with base bottom and legs	Laundry top with base bottom	bottom and legs

Hot Water Supply Boilers

Richardson & Boynton Co. have been manufacturing

Hot Water Supply Boilers for many years.
The above "Super-test" Flat Top units are guaranteed to withstand a maximum working pressure of 120 lbs. per square inch which is far greater than the nominal pressure in city mains.

"Super-test" Boiler is equipped with R & B Trithe inside of firepot to insulate against heat loss and holds fire when attention is given only twice a daymorning and night. Each "Super-test'

Each of the above units contains a 6" brick ring around

angular grafe bars which operate in unison. of the shaking lever and you have a clean fire.

The deep ash pit assures long life to the grate bars and ample space for ashes. The ratchet draft door in conjunction with the damper contained in the smoke pipe

opening assures positive control of the fire at all times. The above "Super-test" boilers can be furnished with plain cast iron, copperized or Richardson Galvoxide water section. Other sizes up to 4700-gallon capacity.

Continued on next page

SPENCER HEATERS

Made by SPENCER HEATER COMPANY

Division of Lycoming Manufacturing Company WILLIAMSPORT, PA.

New York, N. Y. Boston, Mass.

PHILADELPHIA, PA. BALTIMORE, MD.

ALBANY, N. Y. SYRACUSE, N. Y.

SCRANTON, PA. HARRISBURG, PA.

BUFFALO, N. Y. ROCHESTER, N. Y.

Spencer Heaters

SPENCER MAGAZINE FEED HEATERS.

or as slow as the fire requires, the magazine supply lasts The Spencer Heater is the original magazine TRADE-MARK feed heater with sloping grates. The water-jacketed magazine holds enough fuel for 12 to 24 hours, Speciwithout attention. As fuel feeds automatically, as fast Speciments.

longer in milder weather.

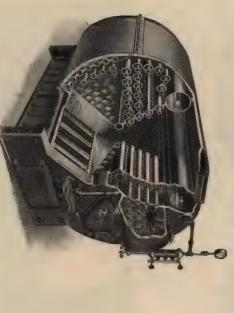
Spencer Heaters are made in sizes to suit any building, large or small, either in steel tubular types or cast



used with any low pressure steam, vapor, or hot to the table below and on the following page, when when installed under normal conditions, according water system. iron sectional types. discontinued. Capacities are guaranteed Commercial ratings have

Special Features for Different Types of Buildings
Spencer Heaters are especially efficient in industrial

buildings, greenhouses and garages where uniform heat is desirable; and in churches, theaters, schools and buildwithout the attention of a night fireman. ings where they give constant, even and uniform heat,



50 Series, Spencer Tubular Steam Heater
For large building work—an efficient magazine heater of combination
water tube and return tube construction



100 Series, Spencer Tubular Steam Heater for use in multiple story buildings

SIZES AND GUARANTEED CAPACITIES OF SPENCER STEEL TUBULAR HEATERS

	100 Series	50 Series	15-21 Series		
7 · · ·	3-80 3-90 3-105 3-120 3-140 3-160	3-50 3-50 3-70	15 17 19 20 21	Heater No.	
	6,500 7,600 8,700 9,800 10,900	3,600 4,100 5,100 5,600	1,600 1,950 2,300 2,650 3,000	Direct c. i. column radiation loads,* sq. ft.	
	30.35 34.70 39.05 43.40 47.75 52.10	18.05 20.24 -22.56 24.83 27.00	12.00 13.00 15.00 18.00	Grate area, sq. ft.	
	.27	. 25	. 23	Draft required, in, H ₂ O	
	00 00 00 00 00 00	22222	2-4 2-4 2-4 2-4	Outlets, number and size, in.	
	222222	22222	2-2 2-2 2-2 2-2 2-2	Returns, number and size, in.	
	24 diam65 24 diam65 30 diam65 30 diam70 36 diam70 36 diam70	18x18-50 18x18-55 18x18-60 20 diam65 20 diam70	18x18-50 18x18-55 18x18-60 18x18-65 18x18-65	Size chimney flue, in.—ft.	
	222	00 00 00 00 00	166 166 166	Smokepipe diameter, in.	
	98 10414 11015 11634 123 12914	11058 1112 11181 1241 1241 1241 1241 1241	904827 644666	Over-all	
	1161/8/	00 00 00 00 00	33333	Ill dimensions, in.	
	10000000	77777	22222	ns, in.	

I his includes ample provision for heat loss in covered mains, risers and returns, and for peak loads. Heaters No. 3-45 to 3-160 are furnished with steel jackets and 1½-in. Rockwood asbestos covering, also pipe header. Heaters No. 15-21 are furnished with steel jackets only. Chimney flue sizes are based on a maximum flue temperature at boiler smoke outlet of 500° F.

NATIONAL BUILDERS CATALOG

Continued on next page

For the home, the Spencer is especially convenient,

as it needs attention only once or twice in 24 hours.

Spencer Economy for Building Owners

uct pea coke. Where anthracite and coke are not availany non-coking graded fuel. sizes of semi-bituminous coal, such as Pocahontas, or able, they are equally efficient when fired with smaller half the owner's annual fuel bill by using No. 1 buck-wheat anthracite, and proportionately by using by-prodnon-coking, graded fuel, their greatest saving is made with small sized, low cost fuels. They save as much as Though Spencer Heaters are designed to burn any

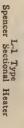
Automatic Magazine Feed Gives Steady Heat

nothing to get out of order. any other sectional heater on the market-and there is stall—the new Spencer Heaters are as easy to erect as mechanical apparatus is needed. Fuel is fed automatically by gravity-no blowers or They are easy to in-

Spencer Heaters. Write for complete descriptions and illustrations of all



Spencer Sectional Heater





Spencer Heater

Spencer Sectional Heater

L-3 Type, Spencer Sectional Heater

A magazine heater for very large homes, small apartment houses and other buildings.

SIZES AND GUARANTEED CAPACITIES OF SPENCER CAST IRON SECTIONAL HEATERS

L-3 Type	L-2 Type	L-1Type	J Type	Ħ
L-306 L-307 L-308 L-310 L-311	L-205 L-206 L-207 L-208 L-208 L-210	L-105 L-106 L-107 L-108	24.5	Heater No.
100876	000000	\$ 70 G		7
3222==	Jank Jank Jank			St
1,500 1,850 2,200 2,550 2,900 3,250	550 725 725 900 1,075 1,250 1,425	390 510 630 750	175 275 375	Direc radia Steam
			•	Direct cast iron radiation loads, sq. ft.*
2,475 3,050 3,625 4,200 4,775 5,350	22444	<u></u>	(4.4)	st iron loads, t.*
\$75 525 200 775	910 1,200 1,490 1,780 2,070 2,360	645 845 1,045 1,245	290 455 620	on ds, tér
		1		
9.3 113.4 19.5	848076	2.60 3.33 4.07	1.30 1.90 2.50	Grate area, sq. ft.
33 441 45	75	8228	000	. F F 6
				ou ou
2244	22-4	2-4	1-3	Outlets number and size, in.
				. 48
Gradanana	имими	SAGG	222	Ret nur a size
22222	22224	2-4 2-4 2-4 2-4	2-3	Returns, number and size, in.
	1			
12x12 12x12 12x16 12x16 12x16 16x16	8x12 8x12 8x12 12x12 12x12 12x12	8x 8 8x 8 8x12 8x12	× × ×	chii fin.—
			00 00 00	Size chimney flue, fr. ft.
555555	466633	88888	8888	٤ ,
				Smokepipe diameter, in.
111111111111111111111111111111111111111	555555	5555	00 00 00	kep mete in.
	,			r, pe
				Le
556 770 84	39 53 53 74	39 46 53	4350	Ov Length
	1			Overall d
CH CH CH CH CH CH	44444	ယယယယ	24	l dim Wie
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				limensions, in.
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				ht

^{*}This includes ample provision for heat loss in covered mains, risers and returns, and for peak loads.

KOOLSTACK OIL HEAT SYSTEM

AND HEATER COMPANY Made by LEADER BOILER

Street, CHICAGO, ILL. Plants at Decatur and Rockford, Ill. 176 West Adams

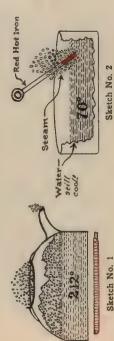
Product

LEADER KOOLSTACK OIL HEAT SYSTEM

Efficient Oil Burning Demands That the Boiler Match the Burner

Boilers designed for coal, coke or wood are not equipped to furnish efficient heat performance when oil is used for fuel. They have been designed for short gas travel, and when converted to oil burning the long gas travel of the latter is not fully utilized. A considerable waste of heat goes up the chimney.

When oil became popular as fuel, Leader engineers saw that this new fuel made practical a principle of heat conductivity not possible with solid fuels. The result of their experiments is the Koolstack Boiler and the Koolstack Burner. Designed particularly for gas and oil, these have more heating surface and longer gas travel Their success is reflected in the saving in fuel costs, and satisfaction enjoyed by Koolstack users everywhere.



Two Illustrations Prove Koolstack Superiority

Two familiar illustrations will explain to you why the Kool-stack system is the cheapest and most efficient.

The ordinary type of boiler may be compared to the tea-kettle shown in Sketch 1. In such a boiler it is necessary to boil all shown in Sketch 1. In such a boiler it is necessary to boil all the water before steam is made. Result: Longer time required to generate steam; unnecessary waste of fuel.

its end in a vessel of water you immediately get a flash of steam from the top of the pan. This is the Koolstack principle. As soon as you start the burner you begin to secure flow of heat vapor through your radiator piping; your rooms begin to heat, even though the bulk of the water remains cool, to heat gradually. Now consider Sketch 2. If you take a red hot iron and place

Koolstack Produces Heat Economically

The Koolstack System will deliver steam in less than five minutes from cold water,—all because it avails itself of the heat principle shown in Sketch 2. For this reason, it is ideal for intermittent firing, such as may be required for house heat in spring and fall,—and saves fuel costs considerably. In addition, it is the best to use when winter comfort demands quick heat and plenty

The Koolstack Oil Burning Unit

The oil burner unit has been specially designed and engineered to function in the Koolstack Oil-Heat System with the utmost economy and simplicity. It has few moving parts, and all of them are easily accessible. It is built by Sundstrand exclusively for the Koolstack Oil-Heat System, and is approved by The National Board of Fire Underwriters.

NATIONAL BUILDERS CATALOG

The Steel Boiler is built to A. S. M. E. Specifications, for Steam, Vapor and Hot Water. It is heavily insulated with best grade of insulating material and is covered with octagon, steel jacket, attractively finished in Chinese

Koolstack Thermo-Damper utilizes full heat content ith minimum stock loss. Minneapolis-Honeywell controls are used for complete automatic operation. with minimum stock loss.

The Koolstack Oil-Heat System burns any clean oil of No. 3



Fig. No. 2815 Koolstock Oil-Heat Unit. Approximate shipping weight, 1925 pounds.

Expert Installation

Though the Koolstack System is simple as to parts and can be installed without special skill, we prefer that your burner service be given by our own experienced and specially trained oil heat experts. We shall be glad to advise you of the address of the qualified Koolstack expert in your locality. A demonstration he Koolstack System will place you under no obligation. vill prove to you the common sense of using an oil burner boiler designed for each other,—and for your best heat of the Koolstack System will pla It will prove to you the common

The Koolstack System is complete. All fixtures and controls furnished. Combustion chamber is refractory molded in position. With jacket in place, units will go through a 34" opening. jacket removed, through a 30" opening.

WARM AIR HEATING SYSTEMS

NATIONAL WARM AIR HEATING ASSOCIATION

174 E. Long St., Columbus, Ohio

Factors Which Make Warm Air the Most Satisfactory and Desirable Heating System

Healthful Heat

Home health and comfort depend humidity and air motion. It must be system will raise the temperature of the room, but WARM AIR alone affords A room at 70° with ample moisture in the air is vastly more pleasant and has conceded that any type of heating a greater feeling of warmth than dry upon the proper degree of warmth, WARM, MOIST, RE-CIRCULATING AIR.

the ills which come from sudden weather changes, Homes heated with Warm Air are protected against and from the unhealthful effects of dead, stagnant, dry Because a Warm Air System keeps the atmosphere of the entire house in motion it should be installed as a simple matter of health.

Simple of Control

A Warm Air System is simple to control. It is or it will maintain a constant temperature of 70° in flexible. It may be operated to afford just enough warmth to take the chill from the late spring airseverest weather, flooding each room with healthful heat which assures winter well-being.

Warm Air is safe.

Warm Air Heating systems afford years of constant service, surprisingly free from repairs or replace-

Easily Installed

The Warm Air system is simple and easy of installation.

Economical

ment of the standard furnace. Fuel livered direct to the rooms to be heated. Because of this, Warm Air fully without change or rearrangeis converted into heat, which is de-The Warm Air furnace burns all types of fuels-hard and soft coal, coke, wood, gas, oil. Excepting oil and gas, these fuels operate successis the most economical system.

No Lost Floor Space—No Sacrifice of Beauty Make certain that you obtain a Standard Code Installation by going to the dealer displaying this symbol. It is your assurance of a scientific installation, high-grade workmanship, fair prices and fulfillment of the Code Specifications.

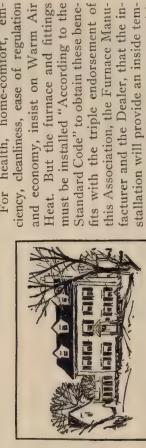
Warm Air requires no bulky appliances demanding floor room. Unobtrusively, harmoniously, the warm air register adapts itself to any scheme of decoration.

tains and drapes, provided the installation is made acarises from registers to streak walls and ruin cur-Warm Air, properly installed, is clean. cording to the Standard Code.

Before You Build Investigate Thoroughly the Pos-

The farther one proceeds with an investigation of Warm Air Heating, installed according to the Standard Code, the wider is the vista of its numerous sibilities of Warm Air advantages.

For health, home-comfort, effi-



Warm Air Heating has been placed upon a scientific basis by more than eleven years of research work carried on in this house under the auspices of the National Warm Air Heating and Ventilating Association in copperation with the University of Illinois. This exhaustive research resulted in the "Standard Code" now in general use.

Send us your name and we'll send perature of 70° in every room with sub-zero weather outside.

you free of charge an interesting booklet of valuable facts about home heating.

WARM AIR H

Standard Code Regulating the Installation of Warm Air Heating Furnaces in Residences National Warm Air Heating Association Approved and Issued by Authority of

Meaning of the Term "Gravity Warm Air Furnace System

Gravity warm air furnace heating systems, to which this code refers, shall consist of one or more warm air furnaces, enclosed within casings, together with necessary appurtenances thereto.

(a) The owner shall provide a chinney for the furnace constructed in a manner to comply with the following specifications.

(b) The chimney must be absolutely smoke-tight throughout its entire length, and must extend at least three feet (3') above a flat roof or two feet above the ridges of peak roofs.

(c) If built of a single thickness of brick or of cement blocks, it shall be lined throughout its entire length with fire clay flue lining, having not less than three-fourths inch (¾") thickness. Flue lining to be laid in mortar and made air-tight.

(d) The furnace flue must have no other opening for attaching any fireplace, furnace, stove, range, water heater, gas or ventilating connec-tion.

(f) Its narrowest internal dimension shall not be less than eight inches (8") and no flue smaller than 8" x 8" rectangular or eight (8") diameter round will be considered suitable when hard coal is to be burned, or 8" x 12" rectangular or ten inch (10") round for soft coal or wood. (e) If necessary to offset the flue, it must be done in such a manner as not to reduce the cross sectional area or create a ledge or obstruction, where loose material may lodge.

(g) It is strongly recommended that nothing less than 8" x 12" internal dimensions be used in any case.

Note 1. It is recommended that the height above the furnace grade be not less than twenty-six feet (26').

Note 2. It is strongly recommended that all new chimneys be built in strict accordance with the ordinance recommended by the National Board of Fire Underwriters.

Method for Determining Sizes of Warm Air Pipes, Wall Stacks and Furnaces for Use in Residences

Section 1. Each First Floor Room Method for Determining Sizes of Basement Warm Air Pipes

Divide square feet of glass by 12, Divide square feet of net outside wall by 60 (See Table A), Divide cubic contents by 800, Add together the above and multiply by 9. The result is the area of the basement pipe.

The sum of:
Glass (sq. ft.) (Note 4) + 12
Net Wall (sq. ft.) (Note 5) + 60
Cubic Contents of Basement Pipe

Section 2. Each Second Floor Room

Divide square feet of glass by 12, Divide square feet of net outside wall by 60 (See Table A), Divide cubic contents by 800, Add together the above and multiply by 6. The result is the area of the basement pipe. (See Sec. 9, b.)

The sum of:
Glass (sq. ft.) (Note 4) + 12
Net Wall (sq. ft.) (Note 5) + 60
Cubic Contents +800 of Basement Pipe

Section 3. Each Third Floor Room

Divide square feet of glass by 12, bivide square feet of net outside wall by 60 (See Table Divide cubic contents by 800, Add together the above and multiply by 5. The result is the area of the basement pipe.

The sum of:
Glass (sq. ft.) (Note 4) + 12
Net Wall (sq. ft.) (Note 5) + 60
Cubic Contents a of Basement Pipe

Basis of Working Rules for Pipes

These formulae are for 70 degrees temperature difference (outside temperature zero, inside temperature 70 degrees Fahrenheit). When temperature difference is more than 70 degrees, add 1½% per degree to final figures. When temperature difference is less than 70 degrees, deduct 1½% per degree from final figures.

NATIONAL BUILDERS CATALOG

No. 1 (a) Frame wall constructed of siding, paper, sheathing, studding, lath and plaster. (b) Same (1 a) construction substituting ½" fibrous board or equivalent for the lath. (c) Same (1 a) construction with additional 3½" insulating fill between studding. No. 2 9" Brick wall plastered on one side. No. 3 (a) 9" Brick wall, air space, furred and plastered. No. 4 (b) Same (3 a) construction substituting ½" fibrous board or equivalent for the lath. No. 5 (a) 13" Brick wall, plastered on one side. No. 5 (a) 13" Brick wall, plastered and plastered. No. 6 (a) 13" Brick wall, plastered and plastered. No. 7 (a) 4" brick, wall, air space, furred and plastered. No. 7 (a) 4" brick, paper, sheathing, studding, lath and plaster, (b) Same (7 a) construction substituting ½" fibrous board or equivalent for the lath.
--

Ceil

No. 13		No. 12	No. 11		No.
pui Cus		12	=		10
(c) (d)	(a) (c)	99	ව ඔම	<u> </u>	(F)
	(12 a) construction with additional ½" fibrous ard fastened on top of joists		Lath and plaster with tight floor above		No. 10 (a) Lath and plaster without floor above
95 95	44 00	65	104	90	70

No. 14 (a) Lath, plaster, rafter, sheathing, any type of shingles or roofing

(b) Same (14 a) construction substituting ½" fibrous board or equivalent for the lath

(c) Same (14 a) construction with additional 3½" insulating 130 74

Floors—Over Exposed or Unheated Spaces

The		(b) Same (15 a) construction with additional 1/2" fibrous board fastened to bottom of joists	No. 1
2			Cr
The substitution of 1/5" insulating materials for sheathing should not be	(c) Same (15 a) construction with sheathing lastened to bottom of joists and with additional 3½" insulating fill between joists	(6)	(a)
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onsidered as having any additional insulating value.

Method for Determining Size of Wall Stacks

Section 4. First Floor Rooms.

10 (a) Lath and plaster without floor above					10 (Sur
Lath and plaster without floor above		<u>a</u>	୍ର	<u> </u>	32	S
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	1	150	90	70	50	

Ceilings without Attic Space Above—Part of the Roof

Section 5. Second Floor Rooms.

Not less than 70% of basement pipe area as determined in Section 2.

Section 6. Third Floor Rooms.

Not less than 70% of basement pipe area as determined in Section 3.

Where two or more rooms are heated from the same basement pipe and stack, the area of such basement pipe and stack shall equal the combined areas as determined in Article 3, Sections 1, 2, and 3.

Explanatory Notes

Note 3. In obtaining glass surface use full casement opening. outside door is figured as glass.

Note 4. To obtain net outside wall multiply height by width and deduct the glass in all windows and outside doors. For all rooms with attic spaces immediately above full ceiling areas shall be taken into account, using Table A. Floors over unexcavated spaces shall be figured as 50% exposed wall and fully exposed floors shall be figured as 100% exposed wall.

Note 5. For rooms having unusual exposure, ordinarily north, northeast and northwest, add 15% to pipe area. For east and west exposure, add 10%.

Note 6. Use no basement warm air pipe less than 8 inches in diameter. If a basement warm air pipe figures greater area than any standard commercial size then the nearest commercial size shall be used, provided, however, that the total pipe area shall in no case be less than the total requirements according to Sec. 1, 2 and 3.

Note 7. It is understood in using the above values for determining basement warm air pipe areas, that these pipes should be run comparatively straight and that they should not be over 12 feet in length. Sharp turns and long pipes should have extra capacity. When warm air pipes exceed 12 ft. in length or have more than two 70 degree turns, the next larger commercial size pipe must be used.

Note 8. The value of 800 (used in cubic contents) is for an estimated air change of one room volume per hour. If it is desired to provide for 1½ room volume use the figure 600. If for 2 room volume use the figure 400.

Transition of Fittings to Stacks

Section 7. (a) Transition from warm air pipes to stacks or register beads shall be made with a well designed elbow or boot and no stack shall be less than 70% of the area of the warm air pipe leading to it.

(b) All first floor fittings and connections shall maintain a free area equal to the round basement pipes leading to them.

To Determine Size of Registers

Section 8. All registers shall have a free area area of the basement pipes leading to them. at least equal to

Method for Determining Size of Furnace

Section 9. (a) Add together the areas (expressed in square inch necessary for heating the building, as determined by the foregoing calculate requirements, Art. 3, Sec. 1, 2 and 3, and install a furnace, rated by following formula.

L=1.75 G (1÷0.02 [R=20])

L=square inches of warm air pipe connected to the furnace as calculated. G=grate area in square inches; the area of the fire pot at the trade level; its most restricted area. R=ratio of heating surface area to grate area; 1.75=a constant based upon the results obtained in the Association Research on a furnace having 20 square feet of heating surface for each square foot of grate, and including factors for:
E=efficiency of heater;
C=combustion = attribute.

F=calorific value of fuel;

0.75=percentage of heat available at registers.

136 B.t.u. delivering value of one square inch of pipe, assuming half of the heat is sent to each floor. This value is based on an operating temperature of 175° F. at the register.

The formula allows 1.75 square inches of warm air pipe area for each square inch of grate area, for the furnace having a ratio of heating surface to grate surface of 20 to 1. For furnaces having other ratios of heating surfaces to grate surface, it adds 2 per cent or deducts 2 per cent for each unit above or below a ratio of 20.

Correction per cent
1.75 G
L=1.75 F+correction Grate area sq. in.

Heating surface area sq. in.

Ratio heating surface area to grate area Correction Correction (

346

346

7540

6920

21.8 to 1

1.8

0.0

1.8

0.0

606

606

606 No. 3 Negative Correction 346 5665 16.4 to 1 —3.6 —7.2 606

Certified Measurements

Certified measurements on warm air furnaces together with the name and number of that furnace, will be issued by authority of the National Warm Air Heating Association, when, if and as, the grate areas and heating surfaces have been accurately measured and approved by the Research Advisory Committee.

(b) In Second floor duplex, flats or apartments where separate heat plants are used, add 50% to the total net calculated areas as determined Art. 3, Sec. 5. This represents the required warm air pipe capacity square inches of the furnace for the second floor. of not

(e) Every warm air furnace shall be equipped with a water pan or other unidifying device.

Gas or Oil-Fired Furnace

(d) In the application of any gas or oil-fired heating system, any deviation from the Standard the furnace itself. furnace to Code shall any warm air apply only to

INSTALLATION

Location of Furnace

Section 1. The location of the furnace shall equalize the length of warm air runs as far as possible, yet give necessary preference to pipes supplying living rooms, dining rooms and main halls.

Section 2. (a) Furnace bustible material must be fifteen (15") inches at re thirty-six (36") inches in fi nce foundation of brick, cement, or other incom-be provided. Said foundation to extend at least rear and sides of furnace casing and at least a front of furnace casing. Foundation to be level.

(b) Where it is necessary to place a heater on a combustible floor, not less than four inches (4") of the hollow tile shall be used in every instance, having, joints matched in such a way that air passage will be free from side to side, so that at no time will the removal of ashes or the handling of coal close up these openings. Such foundation shall be constructed upon, and covered with continuous sheet metal plates, of not less than No. 24 gauge metal, having all joints substantially riveted or double seamed and the bottom sheet to have the edges turned up at least one inch. This floor covering shall extend under the whole of the free box and ash pit of the furnace and outwardly not less than two feet on all sides.

Setting or Assembling of Furnace

Section 3. (a) The base ring of the furnace shall be cemented to the foundation and cement flushed in around the back of the base ring, making an air tight joint. The furnace parts shall be assembled plumb and level, and in a workmanlike manner.

(b) cement All sections and joints shall be properly fitted. Joints requiring shall be well filled and all bolts shall be drawn up tightly.

Casings

Section 4. (a) Warm air Furnaces shall be enclosed in metal walls of brick, tile or concrete.

(b) Portable. Sheet metal casings including casing tops or bonnets shall be made of galvanized sheets, not lighter than 26-U. S. Standard Gauge. They shall fit the casings and casing rings closely, so as to be dust tight, and shall be securely fastened to the front. The casing shall be limed from the upper casing ring down to a line on a level with the grate.

(c) When side collars are used the casing top or bonnet must be of sufficient height so that the largest warm air pipe can be taken from the side without ovaling. In no case shall a distance less than eight (8") inches be maintained between the top of any furnace and the bonnet.

(d) Any furnace, the casing top of which shall come within twelve inches (12°) of a combustible floor, ceiling or joist, shall be protected by a metal shield, extending not less than eighteen (18°) inches beyond the casing of said furnace. This shield shall be suspended at least two inches below woodwork, allowing free air space between shield and woodwork. No furnace casing or top, coming nearer than six (6°) inches of ceiling or joist shall be allowed in any case.

(e) Openings for side casing collars shall be cut into the casing top or bonnet, so that the tops of all openings are on a level. Casing collars shall be fitted into place with a proper flange, or bead on the outside and drawn up on the inside, making a dust-tight joint. All collars shall be of same size as the warm air pipes to which they are to be connected.

h (f) Brick, cement or hollow tile casings shall be constructed as follows: Walls shall be not less than eight (8") inches in thickness, and shall be constructed air-tight. The least inside dimension of rectangular casings shall be the same as that of the portable casing of a corresponding size of turnace. Walls shall be carried to the same height as the portable walls, allowing not less than eight (8") inches between the top of the furnace and the bottom of the top cover. After placing the collars for the warm air pipes, continue the masonry up 2" above the top of the collars, lay single or tee irons across the furnace top, spaced 8', cover these with sheet metal not less than 26 U. S. Standard Gauge, cover these with sheet metal with masonry or sand and run the side walls four (4") inches above the roof of the furnace. A galvanized iron casing bonnet may be used on a brick set furnace.

Provision heater. oge. made in the walls for a manhole 03 give ingress

Warm Air Pipes in Basement

ighter than IC, or galvanized iron. Side seams shall be locked seams. All joints shall be either double seamed or lapped not less than one and one-quarter (1¼") inches and such joints shall be either double seamed or lapped not less than one and and soldered, or riveted. All pipes and fittings shall be properly secured to ceiling or joist. No solder or riveted joint is required where round pipe slips over the casing collar or enters boot or box. Any pipe twelve (12") inches or greater in diameter shall not be made of material lighter than IX tin or No. 26 U. S. Standard Gauge galvanized iron.

All warm air pipes in the basement shall have an upward pitch less than one inch (1") per running foot.

(c) No warm air pipe shall run within one (1") unless such woodwork is covered with asbestos paper with tin or iron. and the paper covered

(d) All warm air pipes in the basement shall be provided with supported on both sides not more than two feet from the casing.

pipes pass through a masonry wall, a metal having a diameter at least 1" greater than the a such a manner that the air space is uniform on thimble shall be provided, lpipe, and pipe supported in all sides.

Wall Stacks

Section 6. (a) Single Stacks, All single wall stacks or wall pipes, heads, boots, ells, tees, angles and other connections shall be made of tin or galvanized iron and shall be covered with not less than one thickness points and shall be covered with not less than one thickness of 21 lbs. per one hundred (190) square freet of asbestos paper. All such pipes shall be braced in a proper manner so as not to obstruct the flow of air to retain the full capacity throughout. All joints shall be locked and held in place by means of lugs or straps. No joint either horizontal or vertical shall depend wholly upon solder to make it tight.

(b) Double Stacks. All double wall stacks or wall pipes, heads, boots, ells, tees, angles and other connections shall be made of tin, not lighter than IC or galvanized iron and shall be made double, from and including the boot or foot-piece in basement to the top of each and every stack and register head on all floors. There shall be continuous air space of not less than five-sixteenthis (5/16°) of an incl, which must be mannianed between the outer and inner walls of all such pipes and fittings of all kinds, styles and descriptions; such pipes, heads, boots and other fittings to be of the styles, or equal to those accepted by the National Board of Fire Underwriters.

All stacks and fittings either single or double must be secured firmly in place by lugs or straps attached to the outer walls of stack and fittings, and no rails shall be driven through these stacks or fittings at any point. No lugs or straps shall be formed by cutting holes in outer walls of stacks or fittings. No wall pipes or fittings shall be used which depend wholly on soldered Joints. The various members shall be so made that all joints are slocked or soldered and the several members shall be attached to each other with slip joints, which are, for the purpose intended, zir-tight.

whether double or such heads, boots, other incombustible (c) Where stacks, heads, boots or other fittings, single, go through the first floor, all openings around stacks or fittings must be filled with asbestos cement or material to make the openings gas and dust-tight.

Registers

Section 7. (a) When baseboard or wall registers are used, they shall be properly and permanently attached to the stack head in such a manner that will prevent any leakage of air between the head and the register.

(b) Floor registers shall be provided with double register boxes of tin or galvanized from with an air space of not less than five-sixteenths (\$16") of an inch between inner and outer boxes or, where single boxes are used, they shall be thoroughly insulated from the wood or other combustible material with not less than two layers of 12 lbs, asbestos paper, or by the use of register borders.

be located equivalent. in or near pipes shall not a covering or its shall be located (c) Registers for warm air and warm air in outside wills unless insulated with one-inch. The warm air registers in the various rooms the inside walls in all cases. furnace system having not more than two warm air registers, of the registers shall be without valve or louvers and a pipe be without dampers. at least one of the thereto shall

Air Supply to Furnace

r may be taken case, however, r furnace room Section 8. (a) The air supply to furnace for warm air lmay be taken from outside or from within the building or partially from outside and partially from within. In no chall air be supplied to any furnace from any basement or not occupied as living quarters. is taken from within the entire length of not less leading from the furnace. No reverse incline or air (b) The cold air intake or return where air building shall have a net area throughout its than the combined area of all warm air pipes I This may be maintained in one or more ducts, trap will be allowed in any sections thereof.

exceed leading (c) When the cold air supply is taken wholly from the outside building the supply duct at its most contracted area must equal or eighty 80%, per cent of the combined area of all warm air pipes I from the furnace. (d) Cold air ducts shall be constructed of metal, tile or other incomstantial having smooth inner surface and shall maintain a constant net area throughout their entire length and shall be made dustright. Horizontal rectangular return ducts shall have at least 10% greater area than vertical connecting pipes. Where a boot or shoe is connected to the casing at the base, the opening shall not extend higher than a line of the prevel of the grate of the furnace. The width of the shoe shall be of proper measurement to make the area at least equal to that of the round or square pipe to which it is connected.

(e) Wherever the space between joists is used to convey cold air overhead, all bridging and bracing shall be removed and a sheer metal pan shall be constructed to extend not less than two (2") inches below said joists. The connection from this pan to the boot or shoe shall be made of galvanized from not less than U. S. Standard Gauge, and shall have a transition collar, the top area of which shall be at least 10% greater than the area of the connecting pipe.

(f) When it is necessary to set the furnace over a pit and connect up cold air under the basement floor, such put or cold air trench shall not exceed eighteen inches (18") in depth below the casing ring and the width of the trench or frenches shall be of proper measurement to make the area at least equal to the pipe to which it is connected. The connection between the cold air pipe or duct and the underground pit shall be made with converse transition joint as described in Article VI, Section 8 (b) and (d).

(g) The cold air face or faces shall be made of wood or metal. When set in floors the top of same shall be flush with floor. Where cold air face is placed in a seat or sidewall (whether furnished by owner, general contractor or furnace contractor) the openwork of face must extend to within at least one (1") inch of the floor line.

The free area of cold air faces shall be at least equal to the free area the duct or ducts to which they are connected.

(h) The effective area of a vertical cold air face lies within fourteen inches of the floor line; hence, the capacity of any vertical cold air face shall be determined by multiplying the base line in inches by not to exceed fourteen inches in height and deducting for the grills or crossbars.

(i) When a fan is installed in the air supply duct of a gravity system the same net area of all ducts shall be maintained as calculated under Article 3, Section 1, 2 and 3 and Article 4, Section 8 (b).

Smoke Pipes

Section 9. (a) The smoke pipe shall be as short and direct as consistent with the location of the furnace. It shall be made of metal not ingither than No. 24 U. S. Srandard Gauge, and not less than the full size of the collar on the iurnace throughout its entire length. It must have no opening for attaching any fireplace, stove, runge, water heater, gas or venifiating connection. It shall be lock seamed or riveted; all joints shall lap not less than one and one-half (134") inches and it shall be rigidly secured. Cast iron smoke pipe may be used.

(b) All smoke pipes shall be provided with check dampers, placed on the side of the pipe or at the end of a tee; when cast iron smoke pipe dampers are used they must be placed between the check damper and the furnace and supported on both sides of the pipe.

(c) Where the smoke pipe enters the flue, a thimble shall be cemented into the flue and the connections thereto made air-tight. Should any smoke pipe come within eighteen (18°) inches of any combustible material, such combustible material must be covered with asbestos paper and a metal shield so fastened that a two-inch air space exists between this shield and the combustible material. This shield shall be no less in size than twice the diameter of the smoke pipe and of sufficient length to cover the combustible material at all points.

(d) No smoke pipe shall project through any external wall or window. No furnace connection is to be made to a flue without a cast iron or skel cleanout having first been provided in the flue flot more than eight skel inches below the smoke pipe opening). The base of the flue shall be filled up to the bottom of the cleanout; all of which must be made air-tight.

Pipeless or One Pipe Furnaces

Section 10. (a) When but one duplex grating is used for both warm intake shall be aleast equal to the area of the vold air in a so-called pipeless furnace, the area of the cold air intake shall be aleast equal to the area of the warm air outlet of the grating. Art. 4, Sec. 4, relative to casing shall not govern when this type of furnace is installed, but the following specification shall be followed: The inner and outer casing of this type of furnace may be made of either black or galvanized iron not lighter than No. 26 U. S. Standard Gauge. A uniform air space shall be maintained at all points between the inner and outer casing. In no case shall the top of the heater be allowed closer than twelve (12") inches to any ceiling or joists above the furnace.

(b) Where joists are cut to accommodate this furnace, headers shall be put in and braced.

Article No. 3 for determining area of warm air pipe shall not in figuring a pipeless furnace.

(d) Where one warm air register face is used and separate face or faces for cold air supply are used, then Article No. 4, Sections 5 and 8 shall apply.

Provisions to Be Made in Buildings Under Construction for Reception of Gravity Warm Air Heating Systems (a) The following provisions shall be made by the owner or building contractor, in any building wherein a gravity warm air heating system is to be installed.

(b) Where warm air register boxes, heads, pipes or stacks are to be installed, joists shall be set not less than sixteen inches (16") on centers and shall be butted and not lapped. Studding shall be set directly over and under joists, leaving a space of not less than fourteen inches (14") between studs and joists.

Wherever joists are cut, headers must be put in to support joists.

(c) All first story single or sub-floors shall be continuous. In all thouses having studded exterior walls, these floors shall be extended to the outside sheathing and all spaces between studding shall be closed at the attic line. Note 9. It is strongly recommended that the attic be tightly floored or ceilings insulated to reduce heat losses.

(d) All partition walls (or sections of these walls) in which heat stacks to second or third floor rooms are to be installed, shall be of sufficient size to accommodate stacks required to heat said rooms.

HEATING Made by HOLLAND FURNACE CO. HOLLAND VAPORAIRE

261

HOLLAND, MICH.

The Holland Vaporaire Heating System

Holland Castings

Constructed of the highest grade cast iron without bolted seams and with a minimum number of sections to prevent gas and smoke leakage. All casting joints double closed joints which are sealed with asbestos The fire pots and combustion chamber are made with are deep and wide to allow for expansion when heated. furnace cement specially prepared according to our specifications.

Furnace Base Plate—Cast in one piece with deep flange around the edge for sealing to the ash pit.

Ash Pit-Deep, cast in one section, machined to fit over base,

ates on cast iron rollers; cast in one piece and slightly cone-shaped to keep the fuel rolling to the walls of the fire pot; thus, the burning fuels are in intimate contact with the casting surfaces and heating efficiency is much higher than that of heaters which employ the through the grate are narrow, preventing smaller Openings for admitting air Oper Grate—Is a special design for the Holland. sizes of fuel from dropping into the ash pit. duplex type bar grates.

of the castings. The lower half is cast with funnel shaped air jets spaced around the fire pot injecting expansion and contraction at the varying temperatures of the castings. The lower half is cast with funnel Fire Pot-Made in two sections to allow for preheated air to unite with the combustibles.

Combustion Chamber—Designed to provide the maximum of space to complete combustion. Cast in one section without joints to prevent smoke and gas leaking into the air-heating chamber.

ing the Special and steel dome types) and is gas and smoke proof. The damper provides a direct and indirect gas passage around the entire circumference of the radiator before the hot gases enter the chimney flue, thus providing the maximum of heat transmit-Radiator-Cast in one piece without joints (exceptting surfaces.

Humidity

For healthful atmosphere the air must contain the correct amount of water vapor. Water pans, due to size, construction and location are inadequate, and do not materially increase

every Holland Vaporaire Heating unit. It is automatic in action. Water for evaporation is carried from the city water lines through flexible copper pipe to the humidifier. Evaporates the required amount of water to provide from 40% to 60% relative humidity. An overflow outlet at the base of the humidifier allows the surplus water to saturate the ashes which eliminates dust when removing the ashes. Humidifier.—The Holland Humidifier is an integral part of erv Holland Vaporaire Heating unit. It is automatic in

Is a product of the Holland Furnace Company. It is placed in the air distributing chamber drawing the cold air up grad-

NATIONAL BUILDERS CATALOG

Instantly a cool, refreshing breeze fills the whole house. The effect is equal to an electric fan in every room and creates a positive circulation of air throughout the house. Power consumption less than a cent per freshing breeze from the consumption less than a cent per freshing breeze from the consumption less than a cent per freshing breeze from the consumption less than a cent per freshing breeze from the consumption less than a cent per freshing breeze from the consumption less than a cent per freshing breeze fills the consumption less than a cent per freshing breeze fills the consumption from the consump conductor ducts. Prevents overheated fur-naces and thus reduces repair costs. It lowers fuel consumption. Per-mits cooling of the home during hot weath-er. When it is hot out-doors, touch a button.



Advantages

The Holland Vaporaire System is especially adapted for home heating. Also, it burns all types of fuel—gas, oil, coal or wood—without waste. One may burn either bituminous or anthracite, including the small pea and buck-wheat sizes, without changing grates.

Guarantee Bond

builder to the ultimate home owner. This company assumes undivided responsibility for the performance of every Holland Vaporaire heating system manufactured, sold and installed by the Holland Furnace Company. The "Holland" Guarantee Bond is transferable from the

Holland Service

Every Holland Branch office (of which there are over 540) is a permanent local institution. Holland men are trained to render the most efficient heating service to the public. They do good work and consequently are held in high esteem in the various communities. Holland heating engineers are especially well equipped to assist architects and builders in designwarm air heat is not practical they frankly tell you so. Architects and builders who are familiar with Holland service usually select Holland Vaporaire heat for warm air installaing the heating plant. If a building is so constructed that

Consult your telephone directory for address of nearest olland Branch Office. Holland Branch

Holland Vaporaire Heater, Weights and Capacities

8,000	13,000	20,000	28,000	40,000
				_
58,000	71,000	91,000	122,000	156,000
086	1085	1245	1500	1990
00	90	80	O,	6
227	276	355	462	605
64	65	99	67	691/2
37	40	45	50	09
19	22	25	28	32
37	2	53	50	90
	19 37 64 227 8 980 58,000 440	19 37 64 227 8 980 58,000 440 22 40 65 276 8 1085 71,000 520	19 37 64 227 8 980 58,000 440 22 40 65 276 8 1085 71,000 520 22 45 66 355 8 1245 91,000 630	37 19 37 64 227 8 980 58,000 440 8,000 40 22 40 65 276 8 1085 71,000 520 13,000 50 28 45 66 355 8 1245 91,000 630 20,000 50 28 50 67 450 9 1500 122,000 810 28,000

WARM AIR HEATERS

"Perfect," "Super-smokeless," "Superior" and "Essex"

Manufactured by RICHARDSON & BOYNTON CO. SINCE 1837

260 Fifth Ave., New York, N.Y.—Utica, N.Y. BRANCH OFFICES

Boston, Mass. Cincinnati, Ohio

CHICAGO, ILL. NEWARK, N. J.

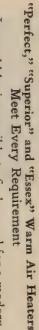
PHILADELPHIA, PA PITTSBURGH, PA.

BUFFALO, N. Y. DETROIT, MICH.

Products

WARM AIR HEATERS—"Perfect," "Supersmokeless," "Superior" and "Essex."

and Hot Water Supply Boilers see pages 250-For Richardson Heating Boilers, Radiators



efficient and serviceable warm air heater not met by one or more in the line manufactured by the Richardson & Boynton Company. It would be impossible to find a need for a modern,

smoke abatement organizations. For small homes and where low basements limit the selection, the Essex has been designed. In such places there is no more happy selection of a heater. For customers who this same demand as an alternative heater. Both can be relied upon to give years of uninterrupted and ecobuildings of less heat requirement the Perfect is ideally adapted. The Superior also is made to meet Smokeless is the logical choice, giving the same high class service and meeting as it does requirements of than the Positive Perfect. For smaller residences and the market that can give more complete satisfaction other larger buildings there is no warm air heater on same exacting requirements as other units in the line more happy selection of a heater. For customers who prefer steel heaters the Perfect Copper Bearing Steel nomical service. has been made. It can be relied upon to meet the For heavy duty work, in large homes, schools and In soft coal sections the Super-Perfect is

A-18-340 A-20-380 A-22-420 A-24-460 A-26-500 A-28-540 A-30-620

307 369 452 546 646 750 895

Weights
Weights
Lbs.
7700
7775
925
1075
1300
1550
2000

THE SUPERIOR WARM AIR HEATER

Capacities and Dimensions



4900 SERIES "PERFECT" POSITIVE HEATERS FOR ANTHRACITE With Cast-Iron Radiator and Large Double Doors

4906	4902	4901	No.
33	24 26	21	Diam. Fire Pot In.
58	53	40	Diam. Cases, In.
10	99	00	Size Smoke Pipe, In.
1033 1340	740 863	596	Pipe Capacity Sq. In.
2240 2865	1955	1365	Shipping Weight Less Cases, Lbs.



THE SUPER-SMOKELESS WARM AIR HEATER Capacities and Dimensions

SS-30	SS-28	SS-26	SS-24	SS-22	SS-20	SS-18	Number
30	28	26	24	22	20	18	Diam- eter of Firepot
62	62	56	52	46	42	300	Diam- eter of Casings In.
9	9	9	9	00	00	00	Size of Smoke Collar In.
1025	875	725	625	525	425	300	Pipe Capacity Sq. In.
2150	17/5	1500	1250	1075	900	750	Shipping Weights Less Casings Lbs.



SERIES "A" "PERFECT" WARM AIR HEATER With One-Piece Cast-Iron Radiator

940 1080 1225	570 687	00000	5284	224	3442 3482 3522
7.65	338	90 OO	36	18	3362
Less C	Capacity Sq. In.	Smoke Pipe, In.	Cases, In.	Firepot In.	Number
Ship	Pipe	Size of	Diam.	Diam.	



THE ESSEX WARM AIR HEATER Capacities and Dimensions

32-18 36-20 40-22 44-24	Number
18 20 22 24	Diameter of Firepot In.
32 36 40 44	Diam- eter of Casings In.
00 00 00 00	Smoke Collar In.
325 400 500	- इ
700 800	Shipping Weights Less Casings Lbs.
pro	ou

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	-46	-
	WARM AIR HEATER	
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3		HE "PERFECT" CUPPER-BEARING WEGGET SIE
		- 71
		- 94
1		100
1		
		- 8

Jumb	1340	1034	1030	1026	1024	1022	Size
0	,			_	-		Diameter Combustion Chamber Inches
	70	62	500	54	52	50	Diameter Cases Inches
	1350	1100	850	700	575	450	Heat Pipe Capacity Sq. In.
	1850	1410	1310	1175	1110	1050	Shipping Weight Less Case Pounds
1			/90			•	0 ==

ties, are made of varying grades of materials and with varying degrees of workmanship. In all of the units manufactured by the Richardson & Boynton Co. the adhered to ever since. highest grade of iron is used. No scrap or inferior metal is introduced. While this increases the cost of production, it is in accord with a time honored policy Warm air heaters, like almost all other commodiby the Company almost a century ago and

Details of workmanship such as the fit of doors and the careful finish of all working parts illustrates the careful attention to details put into each heater.

tive, however, it is necessary that the heater be installed in strict accordance with the Standard Code. When so installed, the purchaser is amply guaranteed quate results. chaser freedom from heating worry, loss and inadepany is sold under a Bond which guarantees the purterior manufacture so often cause. against all of the many troubles which heaters of in-In addition, every heater manufactured by this com-In order that this Bond may be effec-

Richardson System of Mechanical Warm Air Heating and Ventilating

Mechanical the Heating System and Ventilating Works-The Richardson consists of warm air System

into the various rooms through grilles or registers located about 8 ft. above the floor level or placed in or just above the floor as may be necessary, according to the adaptability of the house or building to be heated, thus assuming the control of the movement of all air to the rooms connected to the heating surface of the heater which is set in a galvanized or brick housing known as the heat chamber, and thoroughly warmed. The air is then forced through ducts and discharged heaters (designed for this purpose) with fans or blowers. nto the plenum or pressure chamber back of the "Perfect". Warm Air Heaters; from here the air is passed over the prime Fresh outdoor air is drawn from a fresh air room by a fan ito the plenum or pressure chamber back of the "Perfect"

space for the fresh warmed air) into vent stacks and through grilles at the floor line, fitted with louvers, or slatted and highly sensitive metal panels, which absolutely prevent any back-drafts. The vitiated or cooled air in the rooms is exhausted (to make

A Few of the Many Advantages of This System-

A saving in the cost of installation over other systems of

A saving in fuel consumption.

Perfect heating at all times regardless of exterior conditions.

Perfect ventilation, as the air supply is constant to all

Cooms and without drafts.

The air is always fresh, just as invigorating as the air

tdoors.

There are no cold corners in the rooms as perfect circulation

essure above atmospheric is maintained in rooms heated Prevention of cold air drafts from without, because a slight maintained at all times.

Higher efficiency than with a gravity warm air system. Great economy of operation because of increased efficiency Uniform distribution of heat.

of heaters.

Simplicity of operation and ease of control Greater flexibility, as apparatus can be operated to suit

During the summer without fire in the heaters, the system rovides a temperature of five or more degrees lower than utdoors.

Economy of space in rooms because of location of registers permits the use of all

Hot blast attachment

on heaters

fuel.

he system, supplies the proper amount of moisture necessary or health and comfort. The "Richardson" Automatic Humidifier, which is part of

FURNACE-MAN The ELECTRIC

STOKER COMPANY (Patented Automatic Coal Burner) Product of DOMESTIC

7 Dey Street, NEW YORK, N. Y.

Automatic Anthracite Coal Burners for Domestic Heating and Hot Water Supply.

General Principles

The Electric Furnace-Man makes Pennsylvania Anthracite (Buckwheat and Rice sizes) an automatic fuel. It is easily installed in any heating plant, whether steam, hot water, vacuum-vapor or warm air. Installation is usually made through the ash-front, grates being removed and replaced by the coal burner firepot.

Coal is automatically fed to the bottom of the firepot by means of a screw conveyor, the speed of which regulates the amount. Since the coal is fed to the under side of the fire, the valuable gases cannot escape, but are fully consumed and converted into heat.

Ash Removal

Ash is gradually pushed over the sides of the frepot. Picked up by a screw conveyor on a lower level, it is carried to an ash elevator which deposits it in a sealed container on the floor outside of the heater.

Air Supply

Air for combustion is supplied by a fan. This coal burner is so constructed that the amount of air delivered to the fire is always in correct proportion to the amount of coal being fed. This insures excellent combustion on all feeds.

Controls

Thermostat—Complete temperature control may be obtained by the use of any satisfactory thermostat.

Manual—Control may be by hand—either at the stoker or by means of a chain connected to a small dial placed in one of the upstairs rooms.

Models

To meet varying heating requirements the Electric Furnace-Man is made in four models. Models "H2R" and "M" are each equipped with a single burner. Models "K" and "K-19" have two burners each. See table for capacities.

Electrical Operation

The Electric Furnace-Man is operated by a small electric motor—on the single-burner models, 1/8 h. p.; on the double-burner models, 1/8 h. p.



Cut-away view showing how the Electric Furnace-Man is installed in a rectangular sectional boiler

NATIONAL BUILDERS CATALOG



The Modern Cellar with the E, F-M and Pennsylvania anthracite

Electrical consumption per month is approximately as "K-19"—110-120 k.w.h.

Conversions From Other Fuels

"H2R"—60 k.w.h. "K"—100-110 k.w.h.

Boilers designed to use oil or gas are readily equipped with the Electric Furnace-Man and show exceedingly high efficiency. Boilers designed to burn coal show a much higher overall efficiency with the Electric Furnace-Man than with other fuels.

Advantages

Even Temperature—Due to its continuous operation on graduated feeds, the Electric Furnace-Man shows a quicker load pick-up and a slower diminution than any other system of firing. It is not on full blast one minute and off the next. This gives an even room temperature, free from the fluctuaof firing. It is not on full blast one This gives an even room temperatur tions of intermittent heating systems.

Safe—Pennsylvania Anthracite is the recognized safe, dependable domestic fuel.

Clean—Pennsylvania Anthracite burns without smoke or smudge—there is no odor. It is the clean domestic fuel. Automatic deposit of the ash in a covered container eliminates all dust from raking fires, shaking grates and shovelling ash.

Economy—Pennsylvania Anthracite is the economical domestic fuel. The Electric Furnace-Man uses Buckwheat and Rice—which costs several dollars less per ton than the larger sizes. Here is automatic heating convenience at a big saving over other fuels and at a cost actually lower than hand firing.

Sales and Service

The Electric Furnace-Man is sold by dependable distributors and dealers in over 365 principal cities of the Anthracite burning region.

	Model ". K-19"	2-19" 26" x 45"	1500-1700	1950-2200	12	25%
	Model Model	2-15 1/2" 2-19" 22" x 36" 26" x 45"	600-700 750-850 1000-1200 1500-1700 950-1100 1200-1350 1600-1900 2400-2700	900-1050 1250-1400 1950-2200	10	2%
NGS	Model "	26"	750-850	900-1050	12	23
SIONER RAILINGS	Model "H2R"	15 14"	950-1100	750-850	10	22 %
STOR	ELECTRIC FURNACE-MAN	Diameter of Burner Grate Clearance Required Maximum Equivalent Sq. Ft. of	Radiation Load on Boiler: Steam. Hot Water	Waximum Sq. Inches of Total Area	Maximum Notch Feed Buckwheat or Rice Coal	Approximate Pounds of Coal Fed per Hour

LEONARD REFRIGERATORS

Made by LEONARD REFRIGERATOR COMPANY GRAND RAPIDS, MICHIGAN

Representatives in All Principal Cities

Products

LEONARD ICE-WAY REPRIGERATORS

End Icing Through Wall

Leonard Refrigerators are all equipped for outside icing. In the long narrow kitchen shown below the refrigerator has been properly located close to sink, with ample room allowed for its installation. A practical kitchen ensemble is

thus created.

This installation calls for an endicing model, to be served from rear porch. It should be taken into consideration at time house is planned and built so as to secure exact spacings needed for the door clearance of the outside icing door.



low calls for a refrigerator of the rear-icing type, served from a rear porch or entry. With the complete dimensions given in these pages for all Leonard refrigerators, the builder may make

The plan arrangement of kitchen be-

Rear Icing Through Wall

proper allowances for the refrigerator selected, with assurance that when in-

stalled it will fit properly into designated space. Icing door and drain dimensions are fully given in these pages.

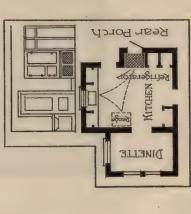
The Outside Icing Way. Modern kitchen arrangement demands refrigerators that may be ired from outside. This is seasily accomplished by Leonard Refrigerators. Consult tables and measurements given in these pages.

Leonard Refrigerators Are Also Equipped for Mechanical Refrigeration



Zernigerator Mitthen

Porch

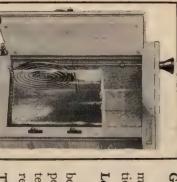


The Leonard Food Safety Signal warns when re-doing is necessary. It dials the proper temperature for preserving food in the provision chambers.



NATIONAL BUILDERS CATALOG

Continued on next page



Water Coolers. The Leonard new and improved Water Coil with push-button faucet, is available for Leonard Refrigerators. May be used with inverted water bottle or connected with city water supply.

Grades of Leonard Refrigerators

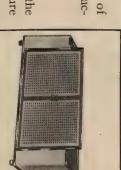
tion features and refinements, and price. materials used, sizes, temperature performance, construc-Grading is AAA, AA and A, determined by class of

Leonard Approved Insulation

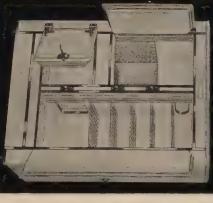
refrigerating principles to secure the desired results. terial is used and applied in accordance with the best performance, economy and durability. Insulating mabest refrigerating engineers to assure best temperature Leonard Approved Insulation was perfected by the

Types and Finishes

All-Porcelain De Luxe, white finish with grey or green trim; All-Porcelain Standard, white finish with aluminum trim; De Luxe Steel, white enamel finish, porcelain and enamel lined; Frost Steel, grey crinkle finish (green or ivory extra), porcelain or enamel lined. Leonard Ice Way Refrigerators come in four styles:



Detachable Bases for Electric Installations. Bases with metal cane ventilated doors may be secured at slight extra charge to harmonize with any type of Leonard Refrigerator. They give the whole unit the appearance of a single cabinet, and permit storage space for mechanical refrigerating unit or for vegetables.



The Leonard All-Porcelain De Luxe Refrigerator has an exterior of white porcelain with grey or green trim. Interior chambers are of one-piece seamless white porcelain with rounded corners. 2" insulation; 2½" insulation on doors. Doors fitted with double, air-tight gaskets. Hinges and self-closing latches are brass, nickel-plated. Waste pipe and patent trap are copper, nickel-plated. All-Porcelain-

Measurements of Refrigerators

Bureau of Standards. They are bored use with electric refrigerating units. Associations in conjunction with the U. S. form with ice cake sizes as adopted by Ice Ice Compartments are standard size to con-

Grade AAA, All-Porcelain De Luxe

51864		50463 50463 50466 50466 50468 50669 50764-G	Catalog No.
Canon 100 34		Alder Amber Amaze Annex Anvil Apple Artil Arena G Arian	Code Word
100	rade	50 100 200 215 270 225 100	Lbs. of Ice
34	AAA,	222244022 24204424 % 74744 %	Width
20%	De L	20222222 00 = 1 20 24 4 = 00 12 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	7 m
52 1/4	Grade AAA, De Luxe Steel	4422000000 45-14001-00 45-14001-00	MENSIONS INCHES Depth Height
6.37	e_	5.31 6.01 8.43 9.9 13.25 16.55	Cu. Ft Prov- ision Cap.
365		335 370 387 507 504 643 996 418	Lbs. Wt., Crated
plated orass, waste pipe and patent trap nickel-plated copper. Shelves are heavy tinned wire. Casters are top-bearing type, and baseboard lifts easily on hinges.	ht.	De Luxe—Steel The Leonard De Luxe Steel Refrigerato	

Grade AAA, De Luxe Steel

100 34	-	-	34 20%
	20%	20% 52%	1 20 % 52 % 6.37

Grade AA, De Luxe Steel

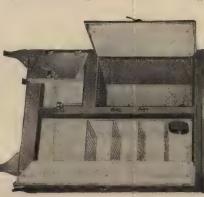
44.0000

	243/8	3215/6	150	Flail	52486
	19	327/6	100	Flora	52484
	19	32 %	75	Faith	52483
	17	30 %	50	Fairy	52482
	153/8	227/16	25	Fudge	52481
	18 %	32%	100	Fagin	51784
	18%	327/16	100	Flute	51484
47 %	183%	32%	73	Facet	51483
	17	30 %	50	Fable	51482

Grade AA, All-Porcelain Standard

equipment. Hinges and self-closing latches are brass, nickel-plated.	rion. Outside corners bright aluminum trimmed. Air-tight rubber gaskets on all doors. Tinned wire shelves, nickel-plated copper waste pipe and trap are standard	All-Porcelain—Standard Re- The Leonard All-Porcelain Standard Re- frigerator has both exterior and interior finished in high-grade porcelain on Armoo
	50432 50433 50434	
	April Arrow Aster	Grad
	50 75 100	le AA
	332%	, All-J
	19 2015/6 205%	All-Porcelai
		9
	42 78 47 8/8	lain Star
	427/8 478/8 5.53 507/6 6.16	lain Standard

NATIONAL BUILDERS CATALOG



The Leonard Frost Steel
The Leonard Frost Steel Refrigerator is obtainable in new beautiful grey crinkle finish. (In green or ivory also at slight additional cost.) Modern design, nickel plated heavy brass hardware. Porcelain or enamel lined. A soundly insulated refrigerator giving A-1 temperature performance.

REAR AND END ICING DO OORS—DRAIN CONNECTIONS

LEONARD REFRIGERATORS =

REAR ICING DRAIN PIPE

OPENINGS FOR OUTSIDE ICING REFRIGERATORS Taken when facing the back MEASUREMENTS FOR LOCATING WALL ICING IN SIDE

of the refrigerator

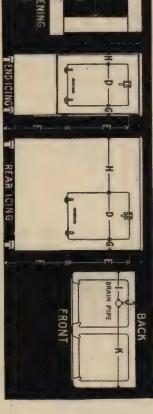
Note: Deduct two inches if no easters are wanted. Allowance and bottom and one and one-half inches on each side made i door. Allow more if you have a very thick brick or stone wall. e of two inches top in wall opening for

Side Ice Chambers with Rear Door

52452 52453 52453 52454 51482 51488 51488 51488 51488 51488 51488 51488 51488 51488 51488 51488		50468 50763 50764-G	50462 50463 50464	50432 50433 50434		N. Ref.
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Side Ice Chambers with End Door

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321/2	222%	191	100%	21%	191%		21 1/2				28 1/8	39	363%	31 1/2	26%	241%	227%	8/17	8,17	21 1/4	20 1/8	C	WALL
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Note: Deduct two inches if no casters are wanted. Allowance of two inches top and bottom and one and one-half inches on each side made in wall opening for door. Allow more if you have a very thick brick or stone wall.

Overhead Ice Chambers with Rear Door

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Ref. N	52882 52883	52253 52254		Ref.
No 52253—De Luxe Steel. No. 52254—De Luxe Steel.	18 17 16 28 16 17 18 13 18 25 18 17 18 25 18 18 18 18 18 18 18 18 18 18 18 18 18	18 1 18 3 29 3 20 14 3 31 3 18 18 18 18 18 29 3 15 15 14 14 3 31 3 18	Α	Our
53—D	171/2	183%	B	Door IN OUTSIDE WALL
e Lux	283/2	293%	C	ALL
e Stee	171/8	20 15 1/4	D	Bac
	131/2	1434	R	OCATI
Ref. No.	25 1/8	313%	13	REFR
52882—Frost Steel 52883—Frost Steel	2720	112%	Q	BACK OF REFRIGERATOR
-From	1 1 1 1 9 1 2 1 9 1 9 1 1 1 1 1 1 1 1 1	111/8	H	OR
it Stee	131%	2% 12% 3½ 12% 11½ 14½ 3½ 14½	1	DRA
	23%	22	-	DRAIN PIPE
	13 14	123/8	×	PE
	1		ĺ	

OPENINGS FOR OUTSIDE ICING REFRIGERATORS MEASUREMENTS FOR ICING IN OVERHEAD LOCATING WALL

Taken when facing the back of the refrigerator

Two Door Front Icers with End Door

Cocating Cocating	1		f		
Door 11N	Ref N	52882 52883	52253 52254		Ref.
Locating Locating	0. 522	163%	181/4	A	Out
Locating Door in End Locating Drain Pipe Locating Drain Pipe	53—D	171/2	1834	В	OCATIA OOR I
Locating Door in End Locating Locating Drain Pipe	e Luxe	233%	29 1/2	C	AVIT
OF REFRIGERATOR DRAIN PIPE B F G H I J K 1434 3135 1176 1176 1236 335 1236 1437 3135 1176 1176 1246 335 1447 1438 3135 1176 1176 1246 335 1447 1438 25 4 1135 134 235 934 1332 25 4 1135 134 235 934 1342 25 4 135 134 135 134 235 134 Ref. No. 52882—Frost Steel	Steel	13%	20 151/4	D.	Lo
G DOOR IN END LOCATING PRICERATOR DRAIN PIPE	. Ref	131%	1484	ম্ৰ	CATING OF RE
RATOR DRAIN PIPE RATOR DRAIN PIPE G H I J K 11/4 11/4 334 14/4 11/4 11/4 334 14/4 11/4 11/4 13/4 2/5 13/4 11/4 11/4 13/4 2/5 13/4 11/4 11/4 13/4 2/5 13/4 11/4 11/4 13/4 2/5 13/4	Zo.	25 1/2	3132	멸	FRIGE
END LOCATING DRAIN PIPE H I J K 1134 1234 334 1474 1134 1234 334 1474 1134 1234 1334 1234 1334	52882-	72%	11/2	Q	RATOR
LOCATING DRAIN PIPE I J K 1236 334 1236 1436 335 1416 1334 236 1334 1456 1334 15teel	-Fros	22	111/2	H	GND
J W 33½ 14½ 3 123½ 13½ 13½ 13½ 13½ 13½	t Stee	131/2	12.3%	H	DRA
1235 PE 1235 PE 1335	-	22	200	4	CATIN IN PI
		131%	12%	×	PE IG

Ref. No. 52254-De Luxe Steel. Ref. No. 52883-Frost Steel

INCINERATORS KERNERATOR

Made by KERNER INCINERATOR COMPANY

1228 North Water Street, MILWAUKEE, WIS.

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The Chimney-fed Kernerator consists Description of the Kernerator

in eight standard

THE KERNERATOR CHIMNEY-FED IN-

Products

CINERATOR, made in eight standard models, and other designs to meet special

of a brick combustion chamber, with fire brick lining, located in the basement of the building at the base of a straight It is constructed when the building is erected in accordance with clear detailed Kernerator chimney flue. SERATION S Garbage and Waste Disposal for New and Existing Buildings,

Fire-safe, sanitary and odorless disposal of garbage and rubbish of all kinds by burning without cost. Made

Garbage and Waste Disposal Without Cost

requirements.

in sizes to fit the various requirements of homes, apartments, schools, hospitals and any other type of building

economical and convenient garbage and refuse

less combustion of garbage and waste.

Kernerator Operation

one of the largest incinerator companies in the world—a position established through continuous specialization in

Seventeen years ago the Kerner Incinerator

Company introduced flue-fed incineration.

Guaranteed Incineration by the Pioneer Flue-fed

disposal is desirable.

where

Incinerator Company

Today it is

the manufacture of a single product of a proven prac-

The Kernerator is the only inciner-

ator legally authorized to use the by-pass

ticability and merit.

feature.

No gas, coal or other commercial fuel is required.

ward and all unpleasant odors are destroyed. The fire feeds upon the waste When the combustion chamber is out further attention. Due to the by-pass paper and other combustible material and gradually dries the damp substances so that they also burn to a fine ash. After several burnings the ashes along with cans, bottles and other non-combustible nearly full the refuse is lighted (a match does it) and the whole mass burns withflue, combustion is from the top downare dearticles, which are thoroughly flame sterilized, are dumped into the ash pit for re-

Interior Construction and Operation of Kernerator Notice the draft reaching the point of burning through bypass grate. Fire is always on top of the burning material, consuming offensive odors.



Kernerator Service

organization of experts in incineration, who know what will and what will not work successfully, will promptly co-operate with the architect to the fullest

NATIONAL BUILDERS CATALOG

working drawings and specifications.

Into this incinerating chamber is built a special arrangement of grates with a patented by-pass fine which provides proper draft control and insures complete odor-

One or more receiving hopper doors are located in pantries or adjacent halls, etc. The flue serves as a fall-way for the refuse deposited in the hopper doors and the flue on the floor or floors above opening into kitchens also as a chimney to carry off the products of combustion during the burning periods.

waste paper, tin cans, broken crockery, bottles, etc.) are placed in the door hoppers. When the doors are closed this spreads out on the grates into a more or less separated and loose pile, permitting the constant flow of air up the by-pass to All garbage and waste (sweepings, refuse falls down the flue into the incinerator combustion chamber where it circulate through and around it causing surprising amount of evaporation between burnings.

moval every few weeks.

successful incineration-

ment.

Hopper Door and Frame Complete in. measured outside the The day-



The daylight opening is 14½x11½ in. Over-all width of frame is 16½

cases where a door larger than model 005 adds efficiency) is 18x18 in. measured outside the door casing.

is the by-pass or upright grate.

pit through and

Vertical Grate

Hopper Door Model 1A3 (for

in. (inside dimensions).

this door in a flue not less than 24x24

building is six stories or higher

(inside dimensions).

Where

in. This door cannot be used in flues

less than 24x24 in. (inside dimen-

Combustion Chamber and Two Methods of Placing Hopper Doors on Floors Above One in kitchen, the other in apartment corridor service closet

escaping into the room—the suction

of the chimney draft prevents it.

Flue Is Always Clean and Sanitary

possibility of either heat or smoke

the air is drawn from the rooms into

into the Building

There is never a

and up the flue.

The large single leaf fire door (clear opening 22x18 in.—weight 110 lbs.) is standard in the Kernerator Models G, O and L.

this fire door the more satisfactory

the incinerator installation. for feeding purposes.

The larger

tutions the Kernerator Fire Door

opening into the combustion chamber in the basement is frequently used

In the larger apartment houses, apartment hotels, hospitals and insti-

and Single Leaf Firing or

Double sions).

Charging Door

These large fire doors enable the janitor or building custodian to feed berry crates and other bulky waste not delivered to the upper floors, directly into the incinerator combustion chamber in the basement. It also provides A larger double leaf fire door (clear opening 30x22 in.—weight 220 lbs.) is standard on Kernerator Models M and P. an adequate opening for conveniently stoking of the fire. The heat from the burning sterilizes the entire chimoily soot and creosote on the inside of the flue walls Falling waste

ney flue, maintaining a clean, sanitary condition.

prevent waste particles from adhering. prevents any large accumulation of soot.

Selection of Model-Kernerator Detailed Plans

scale working drawings and specifications of the model specify a model that suits your needs. On application, the Kerner Incinerator Company will furnish ½-in. If you will send to us, or to any local Kerner office, complete information on any building we will gladly specify a model that suits your needs. On application, and basement arrangement selected.

Kernerator hopper doors are of heavy gray iron

Kernerator Hopper Doors

castings with edges, and seats on which they rest, emery ground, carefully fitted to make them as airtight as pos-

The frames, weighing from 27 to 47 lbs., depend-

ing on size, are firmly anchored into the masonry.

Where none of the standard arrangements meet the tor representative or send to the home office a sketch of ment and typical floor plan and clear basement height) and our drafting department will prepare special drawparticular basement conditions consult the local Kernerathe conditions surrounding the flue to be used ings to fit these conditions.

back aprons (hoppers) on doors are so constructed that the opening into the flue is closed when the door is open. The hopper limits the size of the package which can be deposited in the flue but leaves sufficient opening to take

Hopper Door Model 003 is 111/4x141/4 in. meas-

casing.

ured outside the door ing is 81/4 x81/4 in. Over-

all width of frame is 10 This door cannot be

used in flues less than 12x12 in. (inside dimen-

el 005 (for schools, hos-

pitals and other larger

Hopper Door Mod-

sions).

installations) is 15x19

door casing.

ordinary packages of garbage and waste.

open-

The daylight

Large Single Leaf Firing Door Standard on Models G, O and L



Double Leaf Firing Door Standard on Models M and P

frame is 13½ in. This door cannot be used in flues less than 20x20 in.

Note that the back apron closes off the opening into the flue when the door is open. light opening is 12x11¹/₄ in. Over-all width of

NATIONAL BUILDERS CATALOG

Continued on next page

Glassware for Residential Lighting Made by

MACBETH-EVANS GLASS COMPANY

Chicago · 161 West Lake St. San Francisco · 222 Chronicle Bldg. DISTRICT OFFICES: New York · 19 West 44th St. GENERAL OFFICES: Charleroi, Pennsylvania

CD roducts & Shades and globes of plain and decorated, for use in every room Cremax, Golden Antique and Monax,

factors which must be given careful consideration: ing equipment for the home, there are two prime Fashion In Lighting Glasswarer In selecting light-

possesses a utilitarian value: its colors are perthis purpose. In addition, lighting glassware sibilities, glassware is particularly adaptable for of shaded light. It is accepted that all light deteriorate from constant use. manent, it is very easily cleaned, and it will not importance that the medium used shall also Because of its almost unlimited decorative poscreate artistic and decorative lighting effects. sources should be shaded, and it is of paramount First 7 The increasing tendency toward the use

This has made necessary the preparation of new shapes by means of which these new lamps existing types of residential lighting glassware. can be shaded both adequately and artistically. frosted Mazda lamps has rendered obsolete many Second ' The introduction of new type inside-

quate home illumination. equipment has been so designed that in use that restful quality of light so necessary for ademay be selected and when lighted will present that they may become tiresome in the ordinary site page reflect an authentic tendency toward will enhance the decorative scheme for which it decoration. ciency have in no instance been sacrificed for period of use. style, they are neither bizarre nor so extreme vivid coloring in home decoration. Modern in Designs of lighting glassware shown on the oppo-Each type of residential lighting The quality of light and its effi-

dential lighting, great care has been exercised In the making of Macbeth glassware for resi-

in selecting glass of proper texture as a background for the applied decorations:

colorful illumination is the prime requisite. artistic decorative effects, where restful and rich, cream tint, is especially adapted to Cremax Glass + so named because of its

and thus insured against the possibility of fadan applied finish. It is a natural colored glass character during manufacture rather than from ing when used for exterior lighting. Golden Antique Glass r procures its unusual

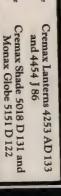
glass which transforms the uncomfortable bril-liancy of high-powered lamps into usable and Monax Glass is truly a remarkable diffusing readily to decorative treatment. evenly diffused illumination. It lends itself

proper effect. use in order to obtain proper diffusion and Your dealer will recommend the proper size to Macbeth shade and globe is scientifically fifty, sixty and one hundred-watts. secured in the following sizes: twenty-five, designed to accommodate one of these sizes. necessary to satisfy general lighting requireimately forty-five shapes formerly considered Lamps r Five Mazda lamps now replace approx-These lamps, frosted inside, may be

in stock, please communicate with us direct. your dealer does not carry Macbeth glassware within the means of every home owner. decoration, but prices are so graded as to come complete Macbeth line. Any Macbeth dealer or globe to harmonize with every scheme of will gladly show you other styles to suit your illustrated constitute but a small portion of the Prices, etc. 7 The shapes and decorations here individual purpose. Not only is there a shade

For further details and literature, write to:





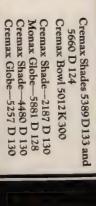
Cremax Antique Iridescent Shade 4534

5389 D 115

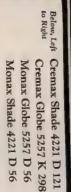
Cremax Bowl 5012 D 121

DINING ROOM









Your Electrical Dealer will show you additional patterns



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SALES REPRESENTATIVES
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Long Wearing Qualities

Take any P & S Alabax ceiling receptacle or sidewall bracket and notice the pure white, flawless composition of the porcelain. Notice, too, its fineness and firmness of texture. Here lie the secrets of the longwearing qualities of P & S Alabax Lighting Fixtures.

wearing qualities of P & S Alabax Lighting Fixtures. Made from the finest porcelain clay by a special P & S process, rugged strength and durability are "fired" into all P & S Alabax fixtures. Their rich, beautiful lustre is as lasting as the fixtures themselves. They will not stain, rust, chip or peel. Nor will time, heat or moisture affect them. And they are easily cleaned to spotless newness by rubbing with a damp cloth.

Attractive

P & S Alabam fixtures add attractiveness to the decorations of new homes or old. To satisfy the modern taste for color, all units are furnished in plain white, or in a variety of lovely pastel shades and color stripings.

Ready for Installation

P & S Alabax lighting fixtures may be obtained ready for immediate installation. To allow the purchaser to select according to his own dictates of taste, glassware is not furnished.

Cafe

P & S Alabax fixtures are safe, too—proof against short circuiting and other fire hazards, caused by defective electric units. No safer material is known for electrical devices than non-conducting porcelain.

Approved

P & S Alabax lighting units are approved by the National Board of Fire Underwriters and meet all the requirements of the National Electric Code.

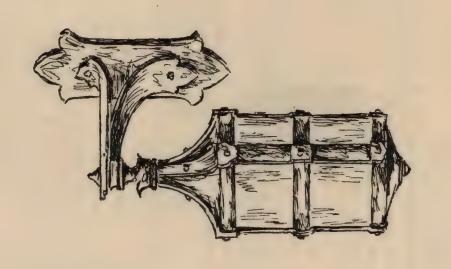
Send for Folder

Send for our four-page folder showing in full colors, the complete line of P & S Alabax porcelain fixtures. We shall appreciate your giving the name and address of your electrical dealer or contractor.

"Those Who Know the Facts, Insist on Alabax"



CEPHAS B. ROGERS



JIGHTING FIXTURES

DANBURY, CONN.

LIGHTING FIXTURES

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FACTORY

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decoration and architecture. ELECTRIC LIGHTING FIXTURES correctly adapted to Colonial, Early English, Spanish and Italian Styles of

Complete Range of Fixtures for the Home

simple kitchen unit. ing of the home, from the lantern by the entrance to the The line of Cephas B. Rogers embraces the entire light-

cleaned and be efficient in producing the maximum lightsidered, so that the lantern may withstand direct exposure to the elements, and so that the kitchen unit may be easily ing effect with a minimum current consumption. In each fixture the practical function is carefully con-

Value of Lighting Fixtures

It is a generally accepted fact today that lighting fix-tures properly placed and designed play an important part in the comfort and appearance of every room in

efficient lighting unit but also enhance the beauty of the decoration and furnishings of the room. Appropriate fixtures not only serve the purpose of an

advice of experts in the lighting field when selecting equipment which forms such a prominent part of the home furnishings. appearance it is therefore well worth while to obtain the For the sake of practical results as well as artistic

Quality and Workmanship

manufacture, are combined in the lighting fixtures designed and manufactured by Cephas B. Rogers. through three generations of leadership in silverware The qualities of beauty and fine workmanship, inherited

or brass, the elegance of silver, or the richness of gold and crystals. The fixtures embody the simplicity of old pewter, iron

fixtures in harmony with the prevailing modes of archiart, together with an inventive skill in their adaptation tecture and decoration. to modern lighting requirements, keep the styles of these The constant study of ancient and modern objects of

Cephas B. Rogers fixtures are made of heavy cast metal and are not easily dented. The metal will not rust or faces are smooth and clear, making it possible to obtain the finest results in whatever type of finish is required. corrode. The castings are free from burrs, and the sur-

NATIONAL BUILDERS CATALOG

als are of the most recent and approved type. In fact all their durability and appearance. fixtures, are selected with the sole purpose of enhancing of the materials entering into the construction of these best materials throughout; the sockets and wiring materi-In all respects, Cephas B. Rogers fixtures combine the

Guarantee

and material. at the same time serves as a guarantee of workmanship lighting fixture which leaves the factory-The name of Cephas B. Rogers-stamped on every -identifies and

Service to Builders and Owners

ing the design, material and finish required to harmonize scheme of decoration. tion, together with specifications indicating the proposed Conn., on receipt of plans showing details of construcrooms, will be furnished by Cephas B. Rogers, with the architectural design and character of individual Recommendations for the type of fixtures to use cover-Danbury,

owners and builders in selecting the most practical type recommendations, wherever it may be desirable to do so. pose will send a representative fully qualified to make and quality of lighting fixtures to use, and for this pur-Cephas B. Rogers welcomes the opportunity to assist

Stock and Special Fixtures

purpose and in harmony with the architectural design of which lighting equipment may be selected suitable for any brackets and ceiling fixtures in a variety of designs from of both simple and ornate chandeliers, pendants, wall fixtures, Cephas B. Rogers has developed a complete line To meet the demand for artistic and practical lighting

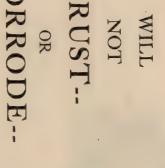
of the most exacting specifications, are carried in stock which fixtures may be selected to meet the requirements for immediate shipment. Standard designs, in a wide range of finishes, from

mate for such work on receipt of complete drawings and to meet special requirements and will gladly submit estispecifications. from their own or architects' designs, lighting fixtures This firm is also prepared to design and manufacture

illustrated on the following pages. duced and carried in stock by Cephas B. Rogers are Fixtures showing only a few of the many designs pro-

of architecture, mailed on request Catalogues showing lighting fixtures suitable for use with Colonial, Early English, Spanish and Italian styles





No. 1093

No. 1092



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CEPHAS B. ROGERS

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= LIGHTING FIXTURES =



No. 986 LIVING ROOM

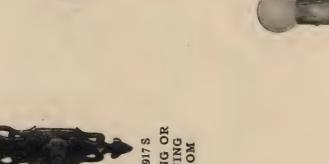


No. 1087



No. 917 S LIVING OR DINING ROOM









ENTRANCE HALL No. 2007

DINING ROOM

No. 1090

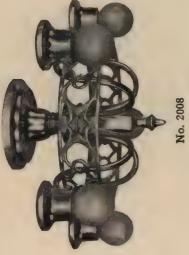
DINING ROOM

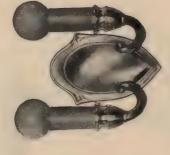
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LIBRARY OR DEN No. 2011

LIVING ROOM





DINING ROOM
OR
LIVING ROOM No. 529 D



ENTRANCE HALL No. 938

CEPHAS B. ROGERS



BEDROOM No. 1002



BEDROOM No. 1003



BATHROOM No. 50



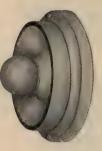
BEDROOM No. 999 S



SUN PARLOR OR KITCHENETTE No. 10701/2



UPPER HALL No. 500



KITCHEN No. 5000

CEPHAS B. ROGERS

NATIONAL BUILDERS CATALOG

HOME VENTILATING FANS

Manufactured by BUFFALO FORGE COMPANY

479 Broadway, Buffalo, N.Y.

BRANCH OFFICES IN ALL PRINCIPAL CITIES

IN CANADA: CANADIAN BLOWER & FORGE Co., LTD., KITCHENER, ONT.

WINDOW VENTILATING UNIT. BUILT-IN HOME VENTILATING UNIT, GLASS PANEL

OTHER PRODUCTS: Blowers, Air Washers, Drying Equipment, Dust Collectors, Exhaust Fans, Mechanical Draft Fans, Pipe Coil Heaters, Spray Nozzles, Unit Heaters, etc.

Built-in Home Ventilating Unit



simple. The location should be close to the ceiling and as near the range as convenient. In houses already built the installation merely requires cutting a square hole in The problem of ventilating the home kitchen has been claiming more attention each year, but the development of the BUFFALO HOME lem easier than ever before. VENTILATING UNIT makes the prob-

the wall.

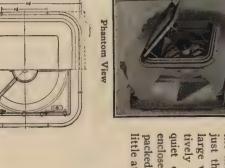
stucco wall. UNIT in the minimum frame wall of 534" or the maximum brick or need to be adjusted for any thickmade to fit walls of varying thickporates every advantage and imness, and only one pair of rods gauge metal, die shaped, from a single piece of ness of wall. provement. The doors are made The design of the box incor-BUFFALO HOME VENTILATING and strong. It is easy to install The box is heavy very

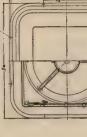


ventilating.

Exterior Showing Unit in Brick House

quiet operation. tively low speed; thus assuring the metal box has blades set at enclosed and equipped with little attention. large volume of air at comparapacked bearings just the right angle to handle a The 12-inch Breezo fan used in Motor is requires fully





Details of Buffalo Home Ventilating Unit

closed, making them rattle proof. In cold weather, the doors that a constant tension is maintained, with the doors open or motor. The leverage operating these two doors is so arranged the double construction, condensation does not form. keep the cold out when the fan is not in operation and due to simultaneously by one lever which also starts and stops the Of particular importance are the doors. They are operated

Glass Panel Window Ventilating Unit



Note Neat, Attractive Appearance

construction to that of our regular steel panel window model, except this type has glass panels on each side of the fan, a able, or where the light is poor. It is the last word in easily desirable feature where there is only one kitchen window avail-The Glass Panel Breezo Home Ventilating Fan is similar in hostess and guests annoyance and sluggish "tired out" feeling on the embarrassment. ture, draperies and walls, and save steam from settling on the furnipart of those working in the kitch-Prevent greasy smoke and

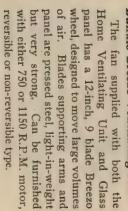


Made in Two Sizes

with fan and

out glass, to the dealer, who cuts and installs glass of suitable size according to the width of the window. switch, but with-

Buffalo Breezo Ventilating Fan





To the Users of National Builders Catalog

We wish to correct an error made in the listing of names under "Boilers" and "Radiators" in the indexing of products.

& Co. whereas that company does not manufacture or distribute The listing referred to includes the name of Jas. P. Marsh either boilers or radiators. Their name properly belongs under the heading "Heating Systems" and if you would be kind enough in our mutual interests to so list it, the favor will be greatly appreciated.

NATIONAL BUILDERS CATALOG

To the Contractor—

trolled plan and your name was submitted to us by reliable local National Builders Catalog is being distributed under a con-

edition without obligation on your part, believing you will find it to be of great value as a comprehensive reference work pertain-We take pleasure in sending you this copy of the 1931 ing to materials and construction.

Yours truly,

PLANNING FOR HOME THE BELL TELEPHONE SYSTEM TELEPHONES

AMERICAN TELEPHONE AND TELEGRAPH COMPANY AND ASSOCIATED COMPANIES

For further information consult the Business Office of your local telephone company

Adequate Facilities

The placing of facilities for telephone wires and apparatus during construction results in general improvement of residences, in that better appearance is secured by concealing the wires and some of the apparatus; additional telephones when desired can readily be placed at convenient locations; protection is afforded to the wires and

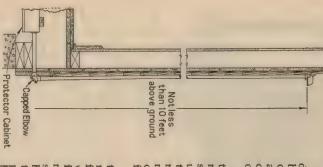
apparatus, thereby serving to prevent interruptions to the telephone service; and the service arrangements can be rearranged or enlarged without marring the walls and woodwork.

With the growing appreciation on the part of telephone subscribers of the conveniences to be obtained from adequate telephone service, more telephones are being installed in homes. It is important, therefore, that the facilities provided in the home be adequate for all of the telephones that may be desired, initially as well as in the future.

With the view of laying out the conduit and other facilities required to the best advantage, the telephone company will be glad to co-operate with architects, engineers, builders and owners relative to desirable service arrangements for proposed residences. This consulting service of the telephone company is available without expense and should be particularly valuable to architects and others who are engaged in the design of plans and specifications for sale to home builders.

Conduits, protector cabinets, telephone cabinets or other arrangements for concealing the wires and apparatus are provided by the owner since these facilities, in common with water, gas and electric light conduits and fixtures must necessarily become a permanent part of the building.

Any business office of the telephone company will be glad to arrange for conferences between owners, architects, engineers and builders and the telephone company's representatives with reference to any phase of this matter.



Service Entrances

Overhead entrances are made in the cellar or basement, except in residences not having cellars. In such cases entrances may be either under the first floor or through the attic, but in either case arrangements must be made for mounting the telephone protector cabinet so that it will be accessible from the outside of the building. owner's expense. ditions permit, arrangements may be made whereby the telephone company will place its cable in an underground service conduit constructed and maintained at the If the owner desires, and con-

The location of the service entrance should permit as direct a route as possible for the wires from the telephone terminal to the entrance. Where the pole line from which connection will be made is in the rear of the property, service entrances will preferably be at the rear of the house. Where the pole line is in the front of the property, service entrances should be on the side of the house nearest the pole from which the wires will be run. If there is any doubt as to the point from which the



wires will run, the telephone company should be consulted before the service entrance is located.

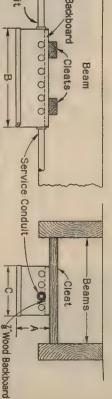
Service Conduits for Telephone Wires

Conduit should be provided for running the telephone rires from the point of attachment on the house into the uilding. The telephone company will run its wires

building. The telephone company will run its wires through this conduit as required.

Service conduits should conform to the following:

(a) They should be of approved rigid iron conduit having an inside diameter of not less than ½ inch for one pair of wires, ¾ inch for two pairs of wires and 1 inch for three



Dimension "B" must be in line with conduit runs

Protector Cabinet mounted between beams

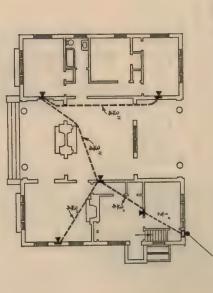
(b) They should be securely fastened to the building. Figure 1 shows a typical installation of a service conduit. and four pairs of wires. Ends of all conduits should be reamed.

The upper end of the conduit should be not less than 10 rom the ground and be protected by an approved service all conduits should be weatherproof.

(d) They should be permanently and effectively grounded according to the requirements of the National Electrical Code and any local requirements covering the grounding of service conduits.

(e) They should terminate in a protector cabinet placed in the cellar or basement, except in the case of residences not having cellars when the protector cabinet should be placed in the service conduit run.

(f) There should be a clearance of not less than 6 inches between the telephone service conduit and the electric light service conduit.



Service Conduit Telephone Outlet Protector Cabinet

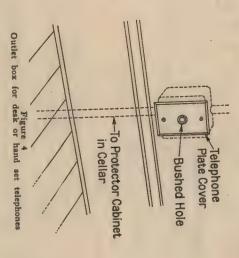
Figure 3

Piagram of possible conduit layout and telephone locations in a typical floor plan

Figure 1 Service Conduit with open cellar ceiling

NATIONAL BUILDERS CATALOG

- PLANNING FO. R HOME TELEPHONES



Telephone Protector Cabinets

with the service conduit for the telephone protector. This is accomplished by providing a metal cabinet of suitable size to which the service conduit and the conduit to the telephones are connected. (See Figure 2.)

of entrance as possible and in accordance with the following:

(a) The entrance that it (a) The entrance should be located in a clean, dry and ventilated place. Otherwise the presence of moisture will lower the insulation of the protectors and detract from satisfactory service.

(b) The entrance should be at a point where the protector and wiring will not be subject to injury and where the protector will be accessible at all times. Coal or wood bins, storage rooms or rooms to which access is difficult should not be selected for the point of entrance.

a location where the telephone installers or repairmen of telephone system will be subjected to contact with the live of electric light or power circuits or apparatus. (c) The entrance shall not be in a transformer vault nor in parts

In bungalows or other residences not having cellars the protector cabinet should be placed in the wall or on the outside of the wall. Details for installing protector cabinets in outside walls are usually furnished by the architect or builder to conform with the type of construction used in the residence. The cabinets should be of non-rusting material provided with hinged doors and so visored or arranged as to keep the protector, placed by the telephone company, dry at all times.

The minimum size of a telephone protector cabinet is 4" deep by 12" high by 8" wide. One protector is required for each tele-phone line. If more than one line is being installed a larger size cabinet is required.

Conduit for Inside Telephone Wires

of the outlets be determined in advance. In order to install the conduits for telephone wires while resi-ences are under construction, it is necessary that the locations if the outlets be determined in advance. (See Figure 3.)

Separate iron pipe conduit run from the protector cabinets to the telephone locations should be installed in the same manner as required for electric light installations. Open ends should be plugged during construction of building to prevent the entrance of moisture or foreign material. Ends of conduit should be reamed.

After installation each conduit should be fished and provided with No. 14 galvanized iron pulling-in wire to facilitate the placing of the telephone wires. For the average residence telephone service the following conduits are satisfactory:

Pair or Triple Wire 2 and 3 Size of Conduit
1/2 inch
3/4 inch
1 inch

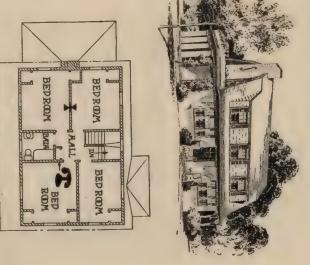
When more than two 90 degree bends are necessary pull boxes should be installed so that no section will have more than two such bends. If sections exceed 50 feet the next larger size conduit should be used or pull boxes added so that no section between pull boxes will exceed 50 feet. No section of any size conduit should

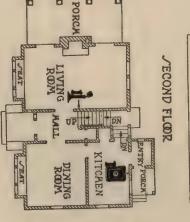
conduit from the protector cabinet should terminate in an outlet box placed as shown in Figure 4. The telephone company will then place the telephone bell box over the outlet box. If a wall box or telephone cabinet is not installed, the run of

Telephone Company Consultation Service

household communication requirements. It may be advisable to consider the use of additional telephone lines, for servant as well as family use, additional bells, push buttons and switches for intercommunication between the telephones, portable telephones for plugging into jacks located at appropriate places, and many other convenient facilities. In these, and other related matters, the advisory services of the telephone company are available. In addition, the Bell System is distributing to architects, engineers and builders two booklets entitled "Planning for Home builders and home owners concerning the location of telephones and the variety of services which are available to meet differing The telephone company will be glad to consult with architects

pany will insure the prompt receipt of copies of these booklets and any other data which may be helpful in planning in advance for built-in telephone comfort and convenience. neers and builders two booklets entitled "Planning for Home Telephone Conveniences" and "Planning for Telephones in Buildings." A call to the business office of your local telephone com-





FIRST FLOOR

Figure 5
Diagram showing telephone arrangements suggested for an average two-story residence

Typical Layouts

C WIRING SYSTEM GENERAL ELECTRI

Consisting Entirely of Wiring Materials

Manufactured by GENERAL ELECTRIC COMPANY

Merchandise Department, Bridgeport, Conn.

How to Plan Wiring

veloped in order that you may be assured of quality materials properly arranged and assembled without the necessity of writing detailed specifications covering a wide vari-The G-E Wiring System has been deety of products.

The G-E Wiring System is a system of wiring embodying adequate outlets, conveniently controlled, and G-E materials throughout.

It Consists of the Following Elements:

Send for a copy of this helpful book-let, "The Story of Comfort,"

A G-E Safety Meter Service Switch. A G-E Safety Panelboard. A G-E Bell Ringer.

G-E Code Wire. G-E Metal-covered Conductors (BX or Rigid Conduit)

G-E Metal Boxes for Switches, Convenience Outlets and Lighting Outlets.

G-E Tumbler Switches.
G-E Convenience Outlets.
G-E Braid X Non-Metallic Sheathed Cable.

The following standards of adequacy are based on an analysis of a large number of adequately wired homes. If they seem to exceed present practice it should be remembered that-

(1) Even those who have long been users of electricity are increasing their consumption at an average of nearly ten per cent each year.

A house is purchased for use over a long period of years. Houses built five years ago are totally inadequate in the matter of wiring today. (3) A complete nationally advertised wiring installation adds much more to the value of a house than the cost of installation. Some six million peo-ple have shown the truth of this statement by their the country. To the best of our knowledge, every one of these homes has been sold at or before the conclusion of the showing for a price well in advance of the normal price plus the cost of the additional attendance at Electrical Homes in various parts of wiring which they featured.

THE STANDARDS OF ADEQUACY

Doorway—Passage through any room and any doorway should be as convenient at night as it is during the day. The inconvenience of groping in Switch Control Should Be Accessible at Every

the dark for inconveniently located switches is a common experience resulting from the omission of a sufficient number of points of

Provide a Twin Convenience Outlet-For rangement; and to provide for present and hold motion-picture projection machines, radio every 50 square feet of floor space. The purpose of this recommendation is to provide for the convenient use of portable lamps and appliances regardless of the furniture arelectrically operated phonographs, housefuture developments in such

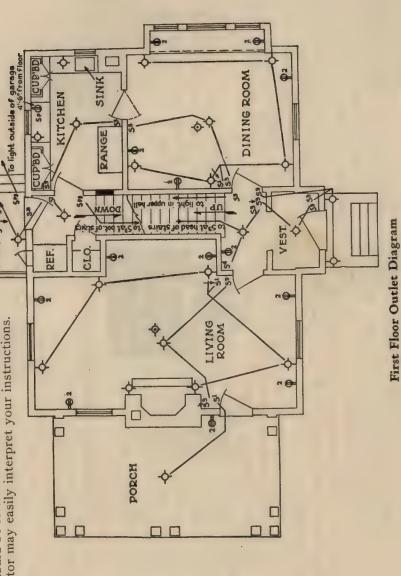
250 square feet or more provide one lighting outlet for every 60 square feet of floor space. These should be divided between ceiling lights and wall lights to provide both general illumination and decorative Provide a Lighting Outlet-For each 50 square feet of floor space in rooms having an area of less Closets should be included in determining areas and allotting light outthan 250 square feet. In rooms having an area of purpose of this recommendation is to provide ighting according to the character of the room. even illumination free from glare.

Combination Switch, Pilot Lamp and Convenience Outlet Units—Should be provided in kitchens, laundries, breakfast nooks and other service rooms for The purpose of this recommendation is to provide for such as flat irons, ironing machines, toasters, etc., without necessitating the constant removal and rethe connection and control of heating appliances, a convenient means of controlling heating devices placement of the connecting plugs

Fan Outlets-Should be provided in the principal more particularly in apartments. The purpose of this recommendation is to help in the solution of this problem by providing a place for the suspension of the electric fan which is both safe and convenient; living rooms. Finding a suitable place for the electric fan is always a seasonal problem in homes and and a place which can be located so as to provide the best circulation of air without regard for the location of furniture and furnishings. To plan the wiring it is simply necessary to indicate on the room plans of your house the necessary switches and outlets, following the above standards as a guide.

The following typical layouts will aid you in arrangement. The symbols used have been standardized and should be followed in order that the electrical contractor may easily interpret your instructions.

to 59 at garage



O- = Ceiling Outlet

Sr Switch, Pilot and Convenience O = Double Conveni-

Q = Wall Outlet

• Floor Outlet = Panelboard

= Single-pole Tumbler Switch

= Three-way Tumbler Switch S4 = Four-way Tumbler Switch

Sp3 = Three-way
Tumbler Switch
and Pilot
Tumbler Switch
and Pilot

BED ROOM (NO.1) BATH BED ROOM (NO.2) 4 BED ROOM (NO.5)

Second Floor Outlet Diagram

WIRING SYSTEM GENERAL (%) ELEC

GENERAL & ELECTRIC SYSTEM WIRING

NATIONAL BUILDERS CATALOG

Continued on next page

WESTINGHOUSE PRODUCTS

WESTINGHOUSE ELECTRIC & MFG. CO.

EAST PITTSBURGH, PA.

Offices in over 110 Cities in the United States

The Stores That Bear This Sign Make Electricity Your Servant

This is the sign of a Westinghouse Electri-

secure complete electrical service, from the vices that turn it into useful light, heat, and wiring that carries electric current to the de-Through the store that displays it, you can

ing in Detroit, the Koppers Building in Pitts-Opera House in Chicago, the Fisher Buildequipment for such buildings as the Civic tures, and public buildings. that installed in skyscrapers, industrial strucelectrical equipment of the same quality, reliability, and sound engineering design, as The homes you are building can have and manufactured the electrical Westinghouse



Warming Pads
Lighting Units
Panelboards
Rectigon Battery Chargers
Safety Switches natic Frons
natic Ferciators
natic Ranges
natic Ranges
natic Water Heaters
natic Water Systems
Glow Heaters
Glow Heaters

> equipment for home electrification. others. Westinghouse supplies a full line of Fox Theatre in San Francisco and many York, Wardell Apartments in Detroit, the burgh, Oliver Cromwell Apartments in New

the equipment he sells. ment, household appliances, motors and conwiring installation, lamps or lighting equipis the distribution outlet of this great organi-Electrification Dealer. where you see the sign of a Westinghouse trol-you will find the answer to that need The Westinghouse Electrification Dealer Whatever your electrical need-a You can depend on

trification Dealer. electrical service, buy from the nearest Elec-For reliable electrical goods and reliable

Solar Glow Air Heaters

Glow is finished in white enamel. For heaters to any room in the modern home. For the bathroom, the Solar in bronze and white enamel finishes, make possible the application of these Glows, in double and single units and finished in attractive antique bronze. bed and living room application, it is styles of Westinghouse Wall-type Solar Solar Glow Air Heaters-The new

tion, the Solar Glow is effective for currents set up by the passage of air heating rooms in the home. Hot air Because of the principle of its opera-



3-Heat Double Unit-Bronze

of heating unit carry the heat to all through the grates and over the back average temperature. parts of the room and thus raise the

small portable radiant type heater. mounted. Thus the advantages of the directly to the front from the element tion are combined with those of the central heating plant method of operaand the porcelain brick in which it is In addition, radiant heat is thrown

Westinghouse Electric Room Heater MA-441. For further information refer to

SPECIFICATIONS

Unit complete with 1500 470820 470821 14.00 plete with 1500 470822 470823 15.00 switch. 11750 470822 470823 15.00 switch. 11750 470822 470823 15.00 switch while Enameled Frame. 497483 10.00 Bronze Front Frame. 497484 6.50 Fold maximum input: 1200, 1500 or 1750 watts. Overall dimensions: 15 inches width, 4% inches inches width, 4% inches clept. 5/hipping weights: One-heat, 30 pounds; three-heat, heater unit, 10 pounds; one wall box, 6 mplete ater...1200 395759 395760 \$25.00

3-Heat Single Unit-White Enamel

NATIONAL BUILDERS CATALOG

One-heat, one complete heater; Three-heat; one wall box, one frame, one heating element. Double Unit
Style No.
Watt- 110 220
age volts volts

Watt- 110 220 age volts volts Single Unit

Heater Unit
complete
complete
with switch Sold 470820 470821 \$14.00
[2 units 1500 470820 470823 \$15.00
Sheet Metal Wall Box... 497481 7.00
White Enameled Frame.. 497485 20.00
Total maximum input: 3000 or 3500
watts. Overall dimensions: 26½ inches
wide. 17½ inches high, 4% inches deep.
Shipping weights: Heater units, 10 pounds
each; one wall box, 12 pounds; one frame,
25 pounds. Slandard gackage. Threetheat; one wall box, one frame, two heating elements.

1-Heat Single Unit-White Enamel

Continued on next page

- SOME WESTING HOUSE PRODUCTS

Electric Ranges with the Automatic Flavor Zone Oven

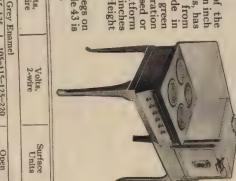
setting a clock and a thermometer, it is possible for a or less than Dutch Oven cooking plus the convenience of automatic time and temperature control. Simply by Flavor Zone Cooking, the exclusive method of cooking in Westinghouse Electric Ranges, is nothing more immediately upon her return from an afternoon or a whole day of freedom. There's no watching and tendwoman to have a delicious oven dinner ready to serve ing, basting and stirring, nor the constant heat regula-tion that has made cooking such a problem for women who want to live a modern life.

Hand Oven

The Console 84 Ranges

This range, the largest of the Console line, with its eighteen inch oven and four platform units, has ample capacity for serving from eight to ten people. Made in either grey, semi-white, or green finish; for full automatic operation only, and with either enclosed or open coil Quick Cook platform units. Floor space 48½ inches wide by 27 inches deep. Height 51 1/4 inches.

A lowboy to replace the legs on the Console 84 or the Console 43 is available at additional cost.

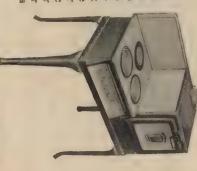


The Co	668397 668 40 3		668401		668399 668405		Style No. Left Hand Right Hand Oven Oven	
nsole 83 I	668398 668404		668402		668400 668406		d Right Hand	
Ranges-Almo	105-115-125	Green Enamel	105-115-125	Semi-White Enamel	105-115-125	Grey Enamel	Volts, 3-wire	
The Console 83 Ranges-Almost identical with the Console 84	105-115-125-220	namel	105-115-125-220	Enamel	105-115-125-220	amel	Volts, 2-wire	
the Console &	Enclosed	-	Enclosed		Enclosed	-	Surface Units	

except for three platform units.

The Console 63 Ranges

operation, with either open coil or enclosed surface units. Floor often required for serving guests in the home or when the family is gives it the extra capacity that is oven sixteen inches wide space 43 inches wide by 27 inches either full automatic or automatic augmented by an additional member. Available in three different finishes; grey, green, or semi-white enamel. Can be equipped for deep. Height 511/4 inches This new Console model has an eixteen inches wide which



The Cor	668365 668371		668369		668367 668373		Oven Oven	Style No.
The Console 43 Ranges	668366 668372		668376		668368 668374		Oven Oven	No.
Ranges	105-115-125	Green Enamel	105-115-125	Semi-White Enamel	105-115-125	Grey Enamel	J-WIIC	Volts
	105-115-125-220	namel	105-115-125-220	Enamel	105-115-125-220	amel		Volts 2-wire
	Enclosed	Onen	Enclosed	Open	Enclosed	Oren		Surface Units

The Console 43 Ranges

The Westinghouse Console type design has proved the most popular design ever created for electric ranges. The Console 43 popular design ever created for electric ranges. The console 43 popular design ever created for electric ranges. Made either in grey, has a 14 inch oven and three platform units. Made either in grey, has a 14 inch oven and three platform units. Made either in grey, or semi-white enamel finish, or in an attractive shade of green. Floor space, 40½ inches wide by 27 inches deep. Height, 49¾ inches.

The Junior Console 43 model is made for automatic and non-automatic control in either grey enamel or black japan finish. It has ample cooking capacity for the family of five or six. Its compactness makes it especially suitable for the kitchen or kitchenette where space is at a premium. Floor space, 35½ inches wide by 24½ inches deep. Height, 43½ inches.



(a) Volts, 3-wire-105, 115, 125. (b) Volts, 2-wire-105, 115, 125, 220.

668360 (a) 668364 (a)

The Low Oven Ranges
For the apartment kitchen, for summer cottages, for small tea
For the apartment kitchen, for summer cottages, for small tea
For the apartment kitchen, for summer cottages, for small tea
For the apartment kitchen, for summer cottages, for small tea
For the apartment of some low-oven, two-ounit range takes a floor space only twenty inches wide
by 20 inches deep and stands just 39 inches high. Available in
either grey enamel or in black japan
with nickel plated trim. Made for

automatic or non-automatic operation. Equipped with either open coil or enclosed Quick Cook platform units.

中午中

668425 668427 Grey Enamel — Non-Automatic 668429 | 105-115-125 | 105-115-125-220 668431 | 105-115-125 | 105-115-125-220 105-115-125 105-115-125-220 105-115-125 105-115-125-220 Volts, 3-wire Open En-closed

((=)

668430 668428 668426 668432 Black Japan-105-115-125 105-115-125 105-115-125 105-115-125-220 Open 105-115-125 105-115-125-220 Enn—Non-Automatic 15 | 105-115-125-220 | Open 25 | 105-115-125-220 | Closed

The High Oven Ranges

The Westinghouse High Oven Range is a new development to The Westinghouse High Oven Range with the oven placed above the meet the demand for a range with the oven placed above the platform. This model has the 16 inch Flavor Zone Oven placed at a convenient height over the platform on which are three cooking units, one of them a new high speed units, one of them a new high speed only 20½ inches wide and 24 inches only 20½ inches wide and 24 inches models are finished in either grey enamel or black japan with nickel trim. Made for automatic and non-automatic operation.

•	-									
	668438 668440		668434 668436		668437 668439	0	668433 668435		Style Number	matro
	105-115-125	Black Japan-	105-115-125	Black Japan	105-115-125	rey Enamel	105-115-125	Grey Ename	Volts, 3-wire	matic operation.
	105-115-125 105-115-125-220 Open 105-115-125 105-115-125-220 Enclosec	Black Japan-Non-Automatic	105-115-125 105-115-125-220 Enclosed	Black Japan—Automatic	105-115-125 105-115-125-220 Open 105-115-125 105-115-125-220 Enclosed	Grey Enamel—Non-Automatic	105-115-125 105-115-125-220 Open 105-115-125 105-115-125-220 Enclosed	Grey Enamel—Automatic	Volts, 2-wire	
	Enclosed		Enclosed		Enclosed		Enclosed		Surface	

Continued on next page

for the Home Electric Fans

16-inch sizes are available in oscillating and non-oscillating models. The 8-inch fan is single speed; the larger fans are two or three speed, controlled by a switch in the base. Standard finish is black, Complete Line-Westinghouse makes a complete line of desk and bracket fans for domestic use. These fans in 8, 10, 12 and



tainable on special order. It is light enough is in keeping with the other appointments in The Home Fan-This splendid 10-inch Home Fan in satin black or ivory and nicke the finest residence. Special finishes are obto be carried from room to room and used

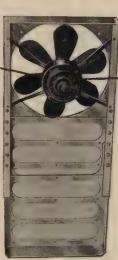
wherever its breeze is desired.

Noiseless in operation, two speed, oscillating or non-oscillating.

The Kitchen Exhaust Fan-This fan will force smoke and objectionable odors from the room in which it is installed or will draw the invigorating outside air into the room, if desired.

The frame has translucent panels which improve the appearance of the unit and allow a maximum amount of sunlight to enter.

be inserted directly on the window frame. This frame is adjustable be equipped. No sawing or cutting of woodwork is required and a The fan, which is 12 inches in diameter, is in a steel frame that can and in the two sizes offered, any window up to 50 inches wide can



Kitchen Exhaust Fan

screw driver is the only tool needed to mount the fan in the window

For further information refer to the Westinghouse Fan Cata-

Panelboards Panels and

Residence Panelboards-Westinghouse Small Residence Panelboards meet the requirements for the control of lighting circuits

These panelboards are made for 125-250-volt, three-wire service

in residences, apartments and stores. and for 125-volt, two-wire service. Junior Residence Panels-These panels come for flush and surface type mounting in sizes from ing. The trim is finished in grey; the box is gal-

2 to 12 circuits. The box and trim are self-align-

Plenty of convenient knock-outs are

Junior Building Panels-These panels are equipped with switch plates provided with rectangular knock-outs for the standard makes

provided vanized.

of toggle switches. They are available for flush or surface mounting in sizes of from 4 to 12

circuits. The trim is finished in grey. The box is galvanized.

Type R Panelboards—Type R Panelboards are strongly built with rugged steel box flanged and riveted at the corners. They are flush type, in sizes of from 4 to 12 circuits with plenty of

The branch circuit units of type R Panelboards are mounted on slotted steel reinconvenient, easily removed knock-outs.

forcing straps which makes it easy to remove and replace the panel in the box. This makes it possible to install the box when the building is being roughed in and leave the mounting of the panel

For further information refer to the Westinghouse Panelboard Catalog, Section 224, Sup. 1, to connect the circuits to the line.

until the wires have been pulled and it is desired

hting Units Kitchen Ligh

The Sollaire Kitchen Unit—This unit is very similar to the Sollux Kitchen Unit in appearance and in its efficiency of light distribution. Certain Sollux features have been eliminated to bring the cost down. The Sollux Kitchen Unit—The Sollux Kitchen Unit has a white enameled hanger, equipped with a 10-inch Sollux globe. This globe is attached to the hanger by the "keeper ring" method of globe support which makes it dust-proof and bug-proof and helps to minimize globe breakage. By means of the convenient tilt-out cap the unit can be cleaned inside and out, and relamped, without removing the globe from the

The hanger is white enameled and can be equipped with 8, 10 or 12-inch Sollaire globes.

For further information see the West-inghouse Lighting Catalog No. 219-B.

hanger.



Sollaire Kitchen Unit

Electric Water Heaters

The Adapt-o-matic—This leader of the Westinghouse line is a complete, insulated tank, with immersion type elements automatically controlled. Made in 30 and 52 gallon sizes. Operated at wattages from 500 to 2500 by simply changing terminal connections on elements. Over- | Shi

Over-	Height	ks	541/2	541/2	90	200	
Wattage	Bot- tom	sed Tanks	1000	1000	1000	1000	r Tanks
Wat	Top	Galvaniz	1000	1500	1000	1500	Copper
Cap	gals.	With (30	30	252	52	With
No.	240-Volt		WC-518	WC-528	WC-718	WC-728	
Cat.	120-Volt		WC-514	WC-524	WC-714	WC-724	

ning	Wt.		350	350	465	465		305	305	410	410
1100	Width		203%	203%	263%	263%		203%	20%	2634	2634
N. N.	Height Inches	ks	541/2	54%	200	30		541/2	543/2	28	. 28
Llement	Bot- tom	sed Tanks	1000	1000	1000	1000	r Tanks	1000	1000	1000	1000
Eler	Top	Galvania	1000	1500	1000	1500	Coppe	1000	1500	1000	1500
1	gals.	With (30	30	25	52	With	30	30	52	52
	240-Volt		WC-518	WC-528	WC-718	WC-728		WC-568			
	120-Volt		WC-514	WC-524	WC-714	WC-724		WC-564	WC-574	WC-764	WC-774
							,				1

NATIONAL BUILDERS CATALOG

other complete insulated tank with single heating element controlled by three-heat snap switch and regulated within temperature limits by the Spencer Thermostat. Can be operated on "low," "medium," or "high" to meet a variety of gallonage requirements. The Adjust-o-matic-The Adjust-o-matic is an

I K		П	
Overall Height Inches	222	80.31	277
Voltage	120 240 240	per Tan	120 240 240
Wattage	3000	With Copper Tanks	3000
Capacity, gais.	00 00 00		*** *** ***
Cat. No.	WT-34 WT-38 WT-58	ı	WT-234 WT-238 WT-258
			_

PANELBOARDS FOR THE HOME

287

Manufactured by FRANK ADAM ELECTRIC CO.

3650 Windsor Place, Sr. Louis, Mo. MAIN OFFICE AND FACTORY

(Mail Address-Dept. O, Main Post Office Drawer 22) DISTRICT OFFICES

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Warehouse Stocks are maintained at District Office Points marked *

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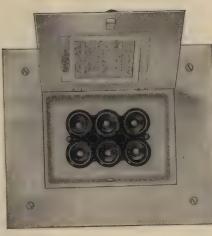
*ATLANTA, GA.

TORONTO, ONT. VANCOUVER, B. C. WINNIPEG, MAN. Montreal, Que. TULSA, OKLA.

Complete line of FUZBOXES, PANELBOARDS and

ments of the National Electrical Code and bear the approval labels of the Underwriters' Labora-tories, Inc., of the National Board of Fire Underwriters. All products fulfill the specification require-ents of the National Electrical Code and bear CABINETS.

individual rooms, hallways, etc., of your home with your main "house" circuit. The fuses safeguard your electrical wiring and protect it from mishaps at a very small cost The fuse is the connecting link between two electrical reuits. There are fuses that connect the wiring in the How the Fuse Safeguards Electrical Work



This is a low price with for small homes and is thoroughly efficient. Made in 2 tuse 2 wire main and 1 fuse 3 wire main. Finished white enamel front, galvanized box. Has 1½ inch gutter, composition sections and other FA Features. Safety

FA Fuzboxes and Panelboards

kept in a handy location. This is the Fuzbox or Panel-board. It should be conveniently located and entirely safe even for children to handle. You are always safe in selecting an FA Fuzbox or Panelboard because they are made There must be a place in your home where fuses are under the most stringent supervision in a factory equipped

There are many types of FA Fuzboxes or Panel-boards. Each one is made to fulfill a specific duty and there is an FA Fuzbox or Panelboard for every type of duty. This is well to know, for not all homes are the same size nor of the same construction. It is, therefore, unreasonable to expect one type of Fuzbox or Panelfor making all parts safe.





without obligations-

and Convenience."

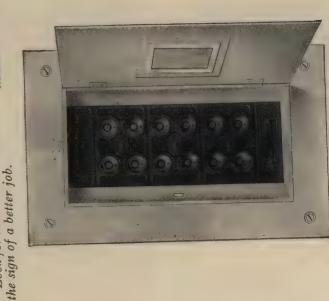
The FA Safety Type "NRSS" Panelboard provides for complete meter features.

with safety guaranteed by its Look for the FA Trade Mark—

manufacturer.

Choose a Panelboard

last one.



This is the FA Safety Panelboard Type 'R.'. showing the simple method of replacing fuses.

Type NR has the copper neutral and where permitted requires only one fuse per circuit.

Made by CYCLONE FENCE COMPANY CYCLONE FENCE

Subsidiary of United States Steel Corporation MAIN OFFICES, WAUKEGAN, ILL.

NORTH CHICAGO, ILL. FORT WORTH, TEXAS

TECUMSEH, MICH.

ALBANY, N. Y.
ATLANTA, GA.
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INDIANA

PACIFIC COAST DIVISION—STANDARD FENCE COMPANY
Los Angeles, Calif. San Francisco, Calif. Portland, Oregon

OAKLAND, CALIF.

WORKS AND OFFICES CLEVELAND, OHIO OAKLAND, CALIF. NEW ORLEAMS, LA.
NEW YORK, N. Y.
OMAHA, NEB.
OSHKOSH, WIS.
PHILADELPHIA, PA.
PITTSBURGH, PA.
PROVIDENCE, R. I.

SEATTLE, WASH.

Cyclone Safeguard Fences

NEWARK, N. J. PORTLAND, ORE.

Tulsa, Okla.
Wilkes-Barre, Pa.
Youngstown, Ohio RICHMOND, VA.
SHREVEPORT, LA.
ST. LOUIS, Mo.
TOLEDO, OHIO

Specifications—Standard height, 6 ft. Built in heights from 4 ft. up to and including 10 ft. Chain Link fabric is full height

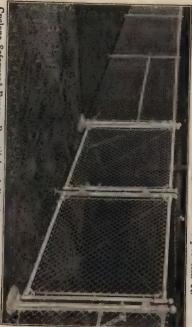
Fabric—"Galv-After" Chain Link copper-bearing wire heavily zinc-coated (or hot-galvanized) by hot-dip process after weaving. No. 9 or No. 6 gauge wire woven in a 2 in. mesh. On heights 5 ft. and over, both edges of fabric have twisted and barbed finish. On heights 4 ft. and lower, one edge has twisted and barbed finish, the other has knuckled finish and it is recommended that the knuckled edge be placed at top of fence dressed below top rail with the barbed edge at the bottom.

Posts—Hot-dip galvanized. Of standard full weight tubular

Posts—Hot-dip galvanized. Of standard full weight tubular copper-bearing steel, made by the National scale-free process, or H column for 6 ft. or over in height.

Line Posts—2 in. H column, weight 4.10 lb. per lin. ft. where fence is 6 ft. and over in height. Where fence is less than 6 ft. in height, 2 in. outside diameter, weight 2.72 per

than 6
lin. ft.
End,
weight
height.
height. Corner, Angle and Pull Posts—3 in. outside diameter, 5.79 lb. per lin. ft. where fence is 6 ft. and over in Where fence is less than 6 ft. in height these posts in. outside diameter, weight 3.65 lb. per lin. ft.



Cyclone Safeguard Fence—Beautiful and dignified property protection country estates and homes—also golf grounds and clubs.

Gate Posts—The size and strength of gate posts for swinging and sliding gates have been carefully determined by our Engineering Department. Details upon request.

Post Spacing—Posts are spaced in line of fence not farther apart than 10 ft. centers.

Depth of Posts—Line posts for fence 4 ft. or lower are set in concrete base; terminal posts 30 in. In 5 ft. fence, line posts are set 30 in., terminal posts 36 in. In Cyclone Safeguard Fence 6 ft. in height and over, all posts are set 36 in.

Post Setting—Concrete post bases are of proper mixture, size and shape to furnish a foundation and support sufficient to withstand any ordinary strain or shock. A liberal factor of safety is provided

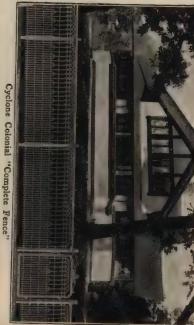
safety is provided.

Post Tops—Hot-dip galvanized. All posts fitted with heavy ornamental ball post tops of malleable iron. The base of these tops fits into the post and a flange carries over the outside to the post against moisture.

Top Rail—Made by the National scale-free process, hot-dip galvanized. Tubular copper-bearing steel 15% in. outside diamater. weight 2.27 lb. per lin. ft. Provided with expansion

NATIONAL BUILDERS CATALOG

rail coupling. Top rail passes through post tops and forms a continuous brace from end to end of each stretch of fence. Top rail is securely fastened to end, gate and corner posts by malleable iron or pressed steel connections.



Standard Heights; 36, 42 and 48 in. Framework, tubular steel, hot-dip galvanized. Fabric, style "F." Pickets spaced 3 in. apart at top, 136 in. apart at bottom.

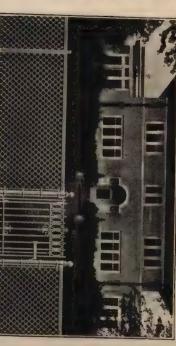
Braces—Made by the National scale-free process, hot-dip galvanized. End, gate and corner posts are braced by tubular copper-bearing steel braces 15% in outside diameter, weight 2.27 lb. per lin. ft. Braces are spaced midway between the top malleable iron or pressed steel connections, then trussed from line post back to end, gate or corner post.

Fittings—All copper-bearing materials, hot-dip galvanized. All fittings used in connection with Cyclone Safeguard fencing and gates are malleable, wrought iron, pressed steel or

aluminum.

Fabric Bands—Aluminum. Fasten the fabric to line posts and top rail, spaced approximately 14 in. apart.

Finish—All materials entering into the fence construction



Safeguard Fence with Wrought Iron Gate

This fence is worthy of a "front" position on your grounds. The wrought iron gate shown is especially designed for use with the Chain Link fence. It brings a touch of the ornamental, that completes the installation.

WOVEN OOD FENCE

Imported by DUBOIS FEN CE & GARDEN CO., INC

101 Park Avenue, New York, N. Y.

Products

Dubois Woven Wood Fence—a closely woven fence made France of split chestnut saplings.

spaced 1 in. apart. CLEFT CHESTNUT FENCE-similar to Dubois, with saplings

Dubois Woven Wood Fence

matched that outsiders cannot see through. No other fence is quite like this one. It is made of split, live, chestnut saplings, closely woven together and bound to horizontal bracings with heavy, rust-proof Copperweld wire. The work is all done by hand. So perfectly are the saplings

Its uses are many and varied. Originally it was designed to give privacy and seclusion to old French gardens and to hide famous estates from the public's gaze. But today it serves metropolitan roof garden look like the real thing. in all sorts of ways, from screening a neighbor's garage, ting off a laundry yard or service entrance, to make service entrance, to making shut-

Dubois is not only extremely serviceable, but it adds a touch of rustic charm wherever used. It is a beautiful fence, harmonizing with almost any type of architecture. The saplings are a natural brown in color, which mellows as time goes on to a lovely silver-gray.

One of the great advantages of Dubois is its extreme economy over a long period of years. It literally lasts a lifetime, and you do not have to paint it as you do other fences. Nor does it require other forms of upkeep expense. This makes it an ideal choice for practically any type of duty: country, suburban, or city. It is also moderate in cost.

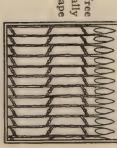
Sizes and Erection.—Dubois is now made in six sizes, 3 ft. 10 in., 4 ft. 11 in., 6 ft. 11 in., 8 ft., 10 ft., and a special 18 in. height for trimming flower beds and garden paths. It comes in sections 5 ft. wide, and is shipped ready to erect against a framework of posts and crosspieces which any carpenter can supply. The posts should be placed about 8 ft. apart. The stringers are fastened at the top and 1 ft. above ground. Then the sections of Dubois are simply nailed to them. It is a job almost anyone can do.

A special framework of mortised and tenoned posts and crosspieces made of cedar, finished to harmonize with the sylvan aspect of Dubois, can be supplied when desired. Gates either curved or straight at the top, are furnished to match the fencing.

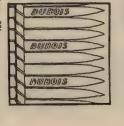
Cleft Chestnut Fence

Like Dubois, except the saplings are spaced 1 in. apart. Meets the demand for a fence both artistic in character and very moderate in price. This style of fencing comes in 16-ft. rolls in three heights, 6 ft. 6 in., 4 ft. 11 in., and 3 ft. 10 in. It does not afford the same degree of privacy as Dubois, but there are many places where it can be used, and at a desirable saving in cost.

For further details, send for free album of Dubois illustrations specially architects and contractors. for architects, landscape



Front View
Heavy, rust-proof Copperweld wire is now used exclusively to bind the sap-



Rear View
The bracing is also made of chestnut—light but exceedingly strong.



Capturing Privacy in a Crowded City for a Side Yard

At Right:
The Laundry Yard and Its Usual Details Effectively Hidden

WIRE AND WROUGHT IRON FENCES

Products of the PAGE STEEL AND WIRE COMPANY, an Associate Company of the FENCE ASSOCIATION Distributed by PAGE]

Ave., CHICAGO, ILL. 520 N. Michigan

AMERICAN CHAIN COMPANY,

INC., BRIDGEPORT, CONNECTICUT

Address Page Fence Association in city nearest you-or write direct to address above.

DENVER, COLO.
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PITTSBURGH, PA.
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IN CANADA:
DOMINION CHAIN. COM-PANY, LIMITED
NIAGARA FAILS, ONT. WATERTOWN, N. Y. WESTPORT, CONN. WOODS CROSS, UTAH ZANESVILLE, OHIO TOLEDO, OHIO TROY, N. Y. TULSA, OKLA. WASHINGTON C. H.,

Page Wrought Iron Fence and Gates are made in many styles. View shows Style 2000.

is made conforming to the specifications of the American Society for Testing Ma-

bearing Steel; Copperweld or Armco

available woven of three wires-Copper-

Ingot Iron. Page Copper-bearing Steel

with either copper-bearing steel or Armco Ingot Iron galvanized after CHAIN LINK PROTECTION FENCE

Products

weaving, or Copperweld steel fabric; Tennis Court Enclosures; Special

terials. Page fabric of Armco Ingot Iron gives you added durability. This metal is not only ferrous, but the most

uniform of all ferrous metals. It con-

CHAIN LINK ENCLOSURES; PAGE
WROUGHT IRON FENCE; ENTRANCE CHAIN LINK PARGATES; STANDARD CHAIN LINK PARTITIONS; WINDOW AND SKYLIGHT GUARDS; PAGE PLAY-

tains a total of less than 16/100 of 1 per cent impurities.

Page Fence made of Armco Ingot Iron Fabric is exclu-

sively a Page product.

All Page Chain Link Fence is galvanized after weav-

in the science of protecting metals from corrosion and rust. This method, developed by Page engineers, deposits on the fabric a heavy but uniform coat of zinc, weighing approximately five times as much as is usually applied to

wire galvanized for commercial purposes.

Page Interlocked Square Mesh is not only the strongest type of Chain Link made, it is more practical and more attractive in appearance. Page is the only fabric made in which the links fall into their natural position to form the

perfect square mesh. It enables erection of the fence without excessive stretching of the fabric. Stresses and strains are equally distributed on different wires, giving

The standard weave for fence purposes is a 2-inch mesh made from No. 6 or No. 9 wire or a 134-inch mesh,

maximum strength.

Page Interlocked Square Mesh Chain Link Fabric is

No. 11 wire for tennis courts,

tection and ornamental purposes for residential en-closures, estates, parks, tennis court enclosures, etc.

tection and ornamental purposes

Page Chain Link Fence

GROUND EQUIPMENT.

Page Chain Link Fence is ideally suited for both pro-

Page Line Posts

ing by a process that represents the foremost development

Standard sizes of drive gates are 10, 12 and 14 feet; walk gates, 3, 3½ and 4 feet. All gates are fully equipped with attachments for lock, center stop, keeper hinges, etc.

Get in touch with the Page Fence service plant nearest you as listed on the preceding page or write direct to the Page Fence Association for interesting literature.



Children and dogs cannot trample flowers-tear up lawns, tubular post construction with top rail.

Placed along the property line, Page Fence forms an impassable boundary.

Page Wrought Iron Fence Increases the fixed value of grounds and build-ings. View shows Style 3000.

NATIONAL BUILDERS CATALOG



Page Wrought Iron Fence (Not Steel)

Wrought Iron is "the most enduring of all metals," which results in Page Ornamental Wrought Iron Fence (not steel), made under Page supervision and in accordance with the high standards of Page craftmanship, being desirable wherever dignified protection is needed. There is a wide range of standard designs suitable for the simplest or most elaborate requirements.

This durable fence is furnished in 8 foot panels and in six different heights ranging from 37 to 72 inches. Square pickets are spaced on 4 or 5-inch centers and in 1½, 5% or 34 inch size, at average points, and are securely locked onto wrought iron channel rails.

Page Fence provides this home with adequate privacy and protection to

Line Posts may be either H-Beam or Solid Bar as specified.

Nation-Wide Service Through 64 Service Plants

The Page Fence Association is composed of 64 of America's leading fence builders. Their reputation depends upon the service they give you and other fence prospects. Erection, which is always a local problem, is handled through the nearest of these 64 service plants. Each of these organizations is composed of fence experts. They carry complete stocks and take full charge of your installation from plans to erection.

Estimates gladly furnished on receipt of rough sketches of proposed work or complete detailed design will be drawn up if desired, and estimates supplied. There is no charge or obligation attached to this service.

Two types of Line Posts are available—the more common type of tubular construction and the Page H-Beam Section Post. Wherever the heavier type of construction is desirable, Page H-Beam Line Posts are recommended

as the maximum in toughness, brute strength, high re-

sistance to corrosion and service.





Chain Link Fabric guarantees trim, taut tennis court backstops the first essential to a neat appearing enclosure.

Continued on next page

RAFTING AND SURVEYING SUPP

Made by EUGENE DIETZGEN COMPANY

2425 Sheffield Avenue, CHICAGO, ILLINOIS OTHER BRANCHES

New YORK, N. Y., 218 E. 23rd Street New Orleans, La., 318 Camp Street Philadelphia, Pa., 1521 Sanson Street

PITTSBURGH, Pa., 805 Liberty Avenue MILWAUKEE, WIS., 373 Broadway SAN FRANCISCO, CALIF., 523 Market Street

Washington, D. C., 407 Tenth Street, N. W. Los Angeles, Calif., 854 S. Hill Street

Drafting Supplies; Drawing Instruments; Builders' Levels; Rods; Measuring Tapes; Brown, Black Line, Blue Print Papers; Standard Blank Forms for the Building Trades; Scientific Books, etc.

IDEAL Drawing Table



well-seasoned white well pine drawing board natural finish. Has a hardwood, Strong, rigid, constructed of wood, varnished and

and top can be tilted to from 32 to 40 inches, Adjustable in height

any angle. No. 4440-6. IDEAL Drawing Table with poard, size 31×43 in.

STURDY Drawing Table (Knocked Down Style)



Designed to meet the need for a strong sturdy drawing table of ample proportions, yet which can be easily knocked down for transportation to and from the job. Seasoned hardwood, varnished natural finish, 34 in. high. crated knocked down. Drawing board top, solid or adjustable as ordered. Comes

With Solid Tops

No. 4472A. Sturdy Drawing Table, Solid Top 36 x 60 in., with 1 tool drawer 10½ x 25 x 3¾ in., and 3 in. raising blocks.

Like No. 4472A but with solid top 36 x

72 in. No. 4472C. Like No. 4472A but with solid top 42 x

With Adjustable Tops

No. 4473A. Sturdy Drawing Table, Adjustable Top 36×60 in., with 1 tool drawer $10\frac{1}{2} \times 25 \times 3\frac{34}{4}$ in., and 3

in. raising blocks. No. 4473B. Lil No. 4473C. Lil Like No. 4473A but with top 36×72 in. Like No. 4473A but with top 42×72 in.

NATIONAL BUILDERS CATALOG

The UTILITY Folding Stand



281/2 to 361/2 inches. Made of hardwood, and is adjustable in height from be folded up and placed out of the way when not in use. Especially adapted for builders to use on the job. Can

board, size 23×31 in. No. 4430-5. UTILITY Folding Stand with drawing No. 4430. UTILITY Folding Stand.

Drawing Boards



vent warping. Two drawing surfaces. Selected seasoned whitewood, with end cleats to pre-

No. 4406. Sizes 16 x 22 in. 18 x 24 in. $20 \times 26 \text{ in.}$ $23 \times 31 \text{ in.}$ $20 \times 24 \frac{1}{2}$

with end cleats to prevent warping. Two drawing sur-Selected seasoned white pine, tongued and grooved

No. 4410, Sizes 12 x 17 in. $20 \times 26 \text{ in.}$ 23×31 in. 16 x 22 in, 20 x 241/2

T Squares and Straight Edges

beveled—24, 30, 36 inches. Selected seasoned maple, celluloid lined edges No. 2056. No. 2077. Steel Straight Edge, nickel plated, one edge Straight Edge-24, 30, 36 inches. T Square—24, 30, 36 inches.

DIETZGEN Drawing Ink

Black and ten colors. 3/4 oz. and 1/2 pt. bottles. dense opaque lines which insure snappy blue prints. Waterproof. Free flowing, quick drying. Makes

Continued on next page

Detail Drawing Papers

Slightly grained surface, fine for ink or pencil. Erases well. Will not soil easily. Selected manila stock—the best for general drafting.

No. 54B Orion (Buff Color) Thick No. 53B Huron (Light Color) Thick In rolls of about 100-120 lbs., 36, 42, In rolls of about 100-120 lbs., 36, 42, 48 in. wide. 48 in. wide. 100 yds. 100 yds. 100 yds. 100 yds. 100 yds.

100 yds.

Lawton Tracing Cloth

side dull, and is a very transparent satisfactory cloth for general drafting. Lawton Tracing Cloth has one side glazed, other

36 in., 42 in. No. 132 Lawton Tracing Cloth, 24 yard roll: 30 in.,

Also furnished in sheets.

 24×36 inches, 250 sheets in carton 18×24 inches, 250 sheets in carton

Bolton Tracing Paper

or pencil. Erases well. Folds without cracking. Exstrong, highly transparent paper, well adapted to ink cellent for Ozalid and Blue Print reproduction. Our Bolton Tracing Paper is a medium thick,

and 58 inches wide. No. 183 Bolton Tracing Paper, 20 yd. rolls, 36, 42

Also furnished in sheets.

 18×24 inches, 250 sheets in carton 12×18 inches, 500 sheets in carton

 24×36 inches, 100 sheets rolled on pasteboard tube

FEDERAL Drawing Instruments



quality rolled nickel silver and tool steel. Compasses and In Pocket Case lined with velvet. A fine set for a builder pen parts of compasses have slide-catch cleaning device Dividers have straightening devices. Ruling pens and No. 1047-Trigonal or Square type, made of good

No. 6370 Builder's Dumpy Level

for laying out sites, determining levels for excavations The best, most accurate and least expensive instrument

dations, piers and abutments. and fills, and for accurately locating elevations for foun-

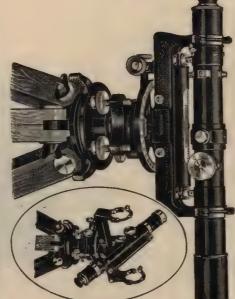


diameters; level vial 5 inches long; 60 seconds sensibility; grees, in quadrants; vernier reading to 5 minutes. Furinches; graduated every degree, numbered every 10 de-1/10 inch division. Horizontal circle, diameter 31/4 justing pins, box with lock, key and carrying strap. nished with solid leg tripod, sun shade, plump bob, ad-Telescope, 12 inches long, magnifying power, 18 to 20

No. 6381 Builder's Convertible Level

strument, meeting every requirement of the builder and or below the horizontal plane. An ideal, all-around infeature for converting it to a transit for sighting above An excellent, accurate builder's level with an improved

sensibility; 1/10 inch division; horizontal circle, 31/4 to 25 diameters; telescope level, 5 inches, 60 seconds minutes. every 10 degrees in quadrants; vernier reading to 5 inches in diameter, graduated every degree, numbered The telescope is 12 inches long; magnifying power, 20



any other instrument. Simply lift the telescope from the from a level to a transit and vice-versa is easier than with wyes, lift the standards until they snap into position, then ard" holds the telescope in any position. The conversion is ready for vertical sighting. place the telescope in the standards and the instrument No detachable or loose parts; the "Disappearing Stand-

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MIXERS-HOISTS-PUMPS-SAW RIGS Made by NATIONAL EQUIPMENT CORPORATION

MILWAUKEE, WISCONSIN

Distributors in All Principal Cities N. E. C. Sales and Service

Products

KOEHRING MIXERS, also Pavers, Power Shovels, Pull Shovels, Cranes, Draglines and Dumptors. T. L. Smith Tiling and Non-Tiling Mixers, also Pavers and Weigh-Mix.

C. H. & E. PORTABLE SAW RIGS, DIAPHRAGM

Kwik-Mix Mixers for Concrete, Plaster and Mortar. Other Products: Insley Excavators, Concrete Placing Equipment, Cars, Buckets and Derricks.

Parsons Trench Excavators and Backfillers. PUMPS, HOISTS and MATERIAL ELEVATORS.

T. L. Smith 21/2-S and 31/2-S Tilters

Built like the big Smiths which are used on large construction projects throughout the world, the Smith $2\frac{1}{2}$ -S and $3\frac{1}{2}$ -S Tilting mixers have the end-to-center mixing action which completely and thoroughly mixes the aggre



O steel-rimmed wheels or four wheel trucks or two whee trailer model, the 31/2-S is a compact, sturdy mixer for either Mounted fast moving between jobs. Smith 31/2-S Trailer rubber-tired wheels,

Smith Non-Tilters, 5-S, 7-S, 10-S

Smith non-tilting mixers are simple and compact in The alldesign, built for years of dependable service.



Smith 7-S Non-Tilte

steel drum is the narrow type with a large diameter, allowing big drum openings.

Both the drive and support are at the center of the

are machine turned and provided with renewable self-aligning bearsupport rollers The underslung

ings.

The 10-S non-tilter is also available on crosswise trucks for curb and gutter, sidewalk, small alley or street

Kwik-Mix Mascot

For pouring the small jobs—a low price 31/2-S trailer mixer which easily produces 35 to 40 cu. yds. of concrete per day. This all-around utility mixer is a full-capacity machine built for regular service at lower cost.

Mascot is easily trailed behind your car-easily placed on the job-and easily operated. In charging position, the lip of the drum is only 411/2 inches from the ground-low enough for shovel charging,



Kwik-Mix 31/2-S Mascot

service and

Fuller & Johnson engine with Wico high-tension magneto. Overall dimensions—Width, 501/2". Length, 72". Equipped with either wide-faced steel wheels or roller bearing rubber-tired disc wheels. Power unit is a 2 H.P. Height, 61"

Koehring 10-S Dandie

With all the improvements known to modern mixer design, the Koehring 10-S dandie is a fast two-bag mixer for the larger concrete jobs in building construction.

Complete drum-end control allows the operator to send a steady succession of batches through the drum permits a very short turning radius. without changing his position.

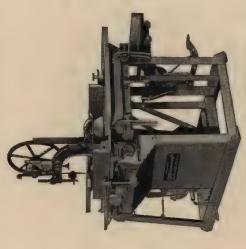
The Koehring Dandie is also built in the 5-S and 7-S Steel-rimmed wheels or rubber-tired disc wheels; charging skip or charging chute; gasoline or electric All Dandies have worm gear type of transmission, mounted on roller bearings, enclosed and running in power. sizes.

C. H. & E. Portable Saw Rigs

Two C. H. & E. Saw Rigs are particularly adaptable These two models are the same with the exception of the Builder has a four horse single cylinder engine and the No. 18-A has a two cylinder in building work-the Home Builder and the No. 18-A. The Home eight horse engine.

An electrically welded steel frame provides a sturdy table, which is hinged to the rear of the frame, can be It is held in position by two raising foundation for the bearings and moving parts. hooks and a raising screw. raised or lowered.

The boring attachment, which will cut perfect travel of six inches by means of a foot pedal. It can be easily raised or lowered by turning a hand mortises, is mounted on the side of the saw frame. The table of this attachment has a horizontal ever under the table.



C. H. & E. Portable Saw Rig

The jointer can be dismounted for taking the rig through a door or moving up and down stairs.

	lumber	lumber
	inch	inch
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pacities	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
ipping Ca	2 0 0 0 0 0	
2		
	uilder	

Home B

Other C.H.&E. Saw Rigs with larger capacities

Developed to meet every requirement in building work —C. H. & E. Hoists and Material Elevators are extraprofit machines where concrete and building materials C. H. & E. Hoists and Material Elevators





No. 18 Single Acting Hoist Will Lift 500 lbs. single line on drum at 175 ft. per minute.

800 lbs. on the sheave wheel at 235 feet per minute, and 18 Hoist is powered with a single cylinder, 4 H.P. engine. 20 Small Reversible Hoist with 8 H.P. engine will lift 1000 lbs. on the drum at 175 feet per minute. The No. In light double cage material elevator work the No. 19 Hoist is the single acting model in this size.

Where the work requires a hoist of greater capacity, the No. 21, single acting, No. 22, reversible, and No. 23 found in three models, 24, 25 and 26, frandles steel with Another Heavy Duty hoist, greater speed on the building jobs. double drum are available.

NATIONAL BUILDERS CATALOG

C. H. & E. Diaphragm Pumps

other places where it becomes necessary to remove excess water-C. H. & E. diaphragm pumps are tions, tunnels, de-watering manholes and the many For pumping in sewer work, footings, foundabuilt in types and sizes to fit your needs. The Mud-Hen on two wheel spring trailer is the latest C. H. & E.

Diaphragm Pump.

C. H. & E. Mortar Mixers

During recent years mortar mixers have proved to be more economical than the old hoe and mixing box. In addition to the saving in time and labor costs, machine

mixing yields a uniform mortar.

The C. H. & E. mortar mixer is the continuous mix type, consisting of a long trough or drum with a revolving shaft, carrying the mixing paddles, running through the



C. H. & E. Mortar Mixer

end of the mixing trough from where the paddles pick The slacked lime and sand are shoveled into one center.

up the materials and mix them as they are conveyed to the other end for discharge. The pitch of the paddles act as a screw conveyor during the mixing.

Due to the height of the discharge end, wheelbarrows are filled direct from the trough. The discharge gate may be set to remain partly open to allow the mortar to flow slowly and discharge itself on a platform as it mixed.

Mortar Capacity

The Kwik-Mix plaster and mortar mixers are made in Kwik-Mix Plaster Mixer



Kwik-Mix Plaster Mixer

nished with hoist so that one operator can mix and hoist 3, 5 and 7 cubic foot sizes. Models 5 and 7 can be furmaterial at the same time.

Write for catalogs or call an N. E. C. Distributor!

Continued on next page

For Material needed in
New or Modernized Construction
Use

Manufacturers' Catalogs

Pages 42-295

HOUSE PLAN SECTION

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The Plan Service
available
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A Practical and Accurate Plan Service

The Plan Service available in connection with Nafor the use and benefit of building contractors and others TIONAL BUILDERS CATALOG is the most comprehensive, practical and accurate service of its kind ever devised interested in home building. It is the service adopted

ing associations in the building and used by many of the lead-

work of home building have frame, brick, brick veneer, tile, stucco finish and cement block authoritative reference You can see in National Builders CATALOG an illustration of a actual photographs, showing the building in its setting of Every one of the homes of and the garages illustrated in appear when finished because all illustrations are made from drawings of what their future home or garage just as it will home owners like this idea of photographic illustraof imaginary trees, lawns, flowers, etc. actually been built. instead actual

draftsmen, engineers and estimators—all practical men NATIONAL BUILDERS CATALOG has a large and competent force of architects, designers, architectural with long and broad experience, and proven ability. Men who are specialists in small house design and conhome is to be.



The homes and other structures shown in NATIONAL edge of building materials and construction methods, BUILDERS CATALOG are thoroughly modern in every detail, yet designed with so complete and practical a knowl-

that a builder is enabled to keep the price within the limits the average home owner can afford.

ence and thorough knowledge of this line of work, our large and capable staff of building ume of business we do, we are Because of our long experiable to produce and furnish ity and at a lower price than experts, and the enormous volcomplete and accurate blueprint plans, specifications, material lists, etc., of higher qualcan be procured from any other reliable source.

This edition of NATIONAL BUILDERS CATALOG contains an should completely meet the deassortment of original, attrac-

sires of every prospective home owner and fully meet the needs of every enterprising

tural merits and adaptability to the modern trend in All homes were selected for their distinctive architecnome design and construction.

quantities of the desired materials without danger of omitting important items. The blue-prints for each home and garage include all

Specifications

elevations, floor plans, sections, dimensions, notations, and other details necessary to enable the building contractor to erect with a perfectly clear understanding.

Detailed Blue-Print Working Plans

Nothing is left to guesswork which insures against er-

rors and saves much in time and labor.

Special Plans and Changes

details to cover each home fully, and erect a building in clearly all the general conditions necessary for the com-With each set of plans are furnished blank specifications which enable the contractor to easily fill in the a manner satisfactory to the owner. These forms state plete construction of the building.

Building Contract

Standard plans can be revised to conform to the wishes of building contractors and their clients who may desire

to make changes or incorporate some idea of their own.

This work as a rule requires only a short time depending, of course, upon the amount of work involved. The

We maintain a Service Department for the purpose of originating and producing special plans to order.

ments between both parties are clear and concise, and These forms, which should be signed by the building in writing, which guards against misunderstandings and disputes during construction or after completion of the contractor and home owner, are properly arranged and carefully worded. Thus all understandings and agree-

There is only a small charge for the entire service which is so thoroughly complete, so carefully prepared and so accurate that no builder can afford to do with



the graceful roof lines of the modernized home, the tractive dormer breaks through the low sweep of roof at Old fashioned homes, unattractive homes, take on T is hard to believe that the beautiful home shown above was once the old home at the left. Notice well arranged windows, the inviting entrance.

Modernizing is simple to accomplish and easy to finance, and even modest modernizing jobs add to the changed into commodious and beautiful interiors easy to furnish attractively, easy to light, heat and ventilate.

That have the modern conveniences, the numerous features that bring the utmost in comfort. These are Making New Homes from Old Houses

value of the property.

the houses that are accepted as being entirely satisfactory—but there are relatively few of them. They

ing and loan associations have vast sums of money to The building industry has been brisk for the We are now living in a period of the nation's greatest prosperity. The actual expendable income in the hands of consumers is unbelievably large. Banks and buildloan for building construction at attractive interest past few years-yet the country is by no means "over-

The housing facilities of this country can be broadly built" with good houses. placed in three groups-

Group One-these are the newest and most modern Houses that are characterized by the latest That are attractive inside and out. architectural style.

NATIONAL BUILDERS CATALOG

Group Two-These are the houses that are so well located, so well conditioned that they will be utilized represent only a part of the homes that have been built within the past few years.

Their foundations are sound, and structurally they are good, but, they lack the modern, and acceptable attractiveness, the desired convenience and comfort. for ten, twenty, fifty, or more years as residences by substantial income families. They are in good neighborhoods where there are no objectionable features.

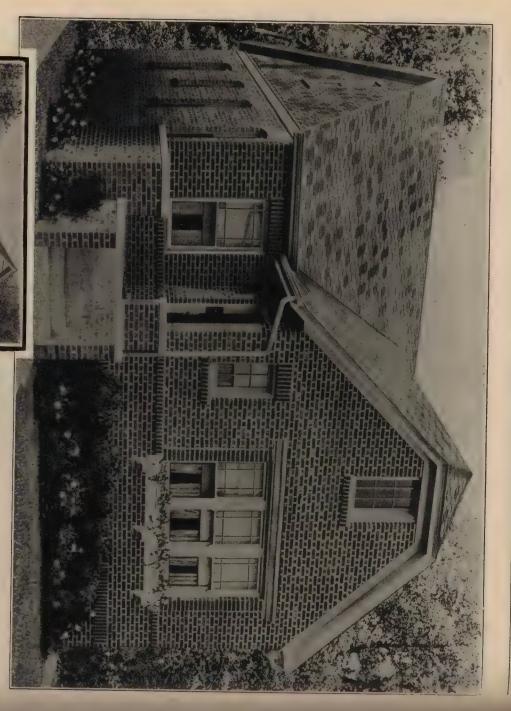
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This consists of 16 pages bound in systematic form that enables the builder to take off quickly and accurately

Materials

Classified Guide for Listing Quantity of

charges are very reasonable.



the startling change in the old house shown above. A VENEER of face brick, placed over the old ex-terior, and a new roof of colorful shingles, make

pearance. Notice the rearrangement of steps leading to entrance. The change in roof lines that add so much to ap-

shower fixture makes bathing an easy, healthful pleasable and a model bathroom with graceful tub and cabinet and many built-in features that save steps and make work easier. Hot water is always instantly availcomfort-high sink, with swinging mixer-faucet, utility izing does to change an old house into a modern home. it easy to read comfortably. ton. archways replaced narrow door ways. venience and greater comfort. light now floods the living room at the touch of a butto recommend them in the way of attractiveness. fixtures replaced the old style fixtures that had Inside, rooms were rearranged to bring more con-Floor and table lamps, beautifully shaded, make These are some of the many things that modern-The kitchen has a new Wide double doors and New lighting that had little

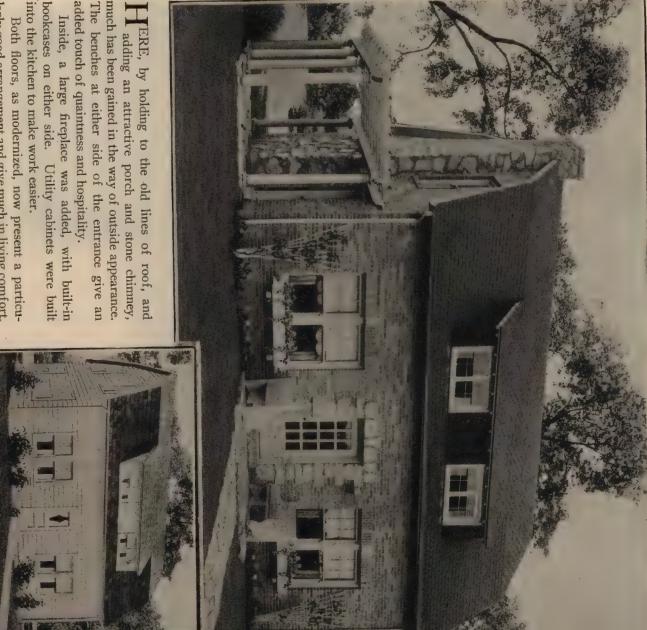
commodities and services of the highest character. in this group, and they are not satisfactory from a of small, poorly arranged, inconvenient rooms, with tional market for radios, automobiles, and many other that their occupants represent the majority of our namodern housing standpoint. Their number is so large small connecting doors. tub. Floors are worn and ugly. The bathtub has legs, or, sometimes, there is no bath-They are not convenient, often not even comfortable. There are millions of homes The interiors consist

poorly conditioned houses. Group Three—Consists of the most poorly located, porly conditioned houses. While millions of families

NATIONAL BUILDERS CATALOG

and move their occupants into better houses for their own good and for the good of the nation at large. except to reduce their number as rapidly as possible very much can be done with the houses in this group times unsanitary conditions, they do not represent de-sirable housing from a social standpoint. Nothing live in these homes under uncomfortable, and some-

the next few years, providing they can satisfactorily that we find the largest single grouping of families, those who normally would acquire new homes within of endeavor in the form of remodeling, or modernizing. It is in these well located, structurally-sound houses It is in the second group that we find the big field



much has been gained in the way of outside appearance. The benches at either side of the entrance give an

bookcases on either side. Utility cabinets were built

larly good arrangement and give much in living comfort. walls and floor. Roof was reshingled in a pleasing bathroom was improved through putting tile on the New lighting fixtures were easily installed. The

green and offers a charming contrast to the buff color-

ing of the brick veneer.

sacrifice, and the ownership of a home represents, in some cases, perhaps the savings of a lifetime. old houses are hard to dispose of, as a rule, except at a dispose of the old home through trade or sale, but

arranged interiors can be made modern, into graceful and beautiful modern lines. obsolete ornamentation, can be remodeled and changed venient, and more valuable as a residence to live in, or be made more livable, more comfortable and conas possible how any old house, structurally sound, can tor trade or sale. It is the purpose of this article to point out as clearly A clutter of small, useless rooms, hard to furnish How old architectural lines, with brought up to How poorly

> to keep three or four fires running, instead of a sinto replace the old stoves with all the labor necessary gle efficient unit. A central heating unit was placed in the basement

commodious, attractive rooms, with attractive arches modernizing, be made into a charming arrangement of tically lighted by modern electric fixtures, that can be convenience at every turn. and broad doorways. Rooms that show comfort and attractively, hard to heat and ventilate can, through fortably furnished and decorated to make real livable well ventilated by the proper placing or regrouping of Rooms that can be attractively and com-Rooms that can be artis-

direction, and work can be carried on piecemeal, at no matter how little is done it is a start in the right One thing to keep in mind about modernizing is, that

302



WHILE the lines of the old roof were harsh and stiff, the shingled gable adds just the touch needed The addition of the railed porch at second story with the doorway with brick steps leading to it have added materially to the exterior appearance of the old home, given it an leading into bedroom, the changing of the style of windows, and adding a bay, a new entrance and porch attractiveness, an appealing charm entirely lacking before. Brought it up-to-date, made it modern, convenient and comfortable and enjoyable to live in. Added materialy to the intrinsic value of the property. to change unattractiveness into beauty.

pleasure of the owner, or the whole job can be done at one time. Money with which to finance a modernizing job is just as easy to obtain as the money for new construction because of the added value given to the old the fact that the addition of new, modern homes, or old homes modernized, to a neighborhood increases the home, because of its more ready salability. Because of property value of the entire neighborhood.

ernizing of one room, and learned the many benefits Many home owners who have started with the modof modernizing, have gone on and on, tearing down

it easier to dispose of, if desired, at a higher price or Money for modernizing plans is easily procured place it where a loan can easily be negotiated should money be needed in an emergency.

through the same reliable sources that loan just as readily for this remodeling work as for new construction. here, adding there, until they now occupy a home that ment in remodeling work is more than offset by the does not suffer by comparison with even the newest homes in their neighborhood. And, the entire investadditional convenience and comfort they now enjoy

Many homes, formerly lacking proper bathroom plumbing and fixtures. New and convenient kitchens replace the old kitchens where every duty was tiresome facilities, now have beautiful bathrooms, with modern intrinsic value of their property.

midst modern surroundings, and in the greatly increased



CHINGLES, in a soft color tone, were placed over the old exterior. An attractive gabled entrance, with neat lantern type light added; and an impressive chimney built of brick.

A sunroom, with well arranged windows, was built on and an attractive dormer at the second story changes

old house into a modern home, good to look at, and to

Made it a real home in every way.

live in.

here and there brought added comfort and turned the

Efficiency cabinets have replaced old cupboards. Modern laundries with up-to-date equipment have made the heating units have replaced old stoves and brought inside family washday almost a time of pleasure. Central temperatures up to the comfort point instead of simply Convenient breakfast and dining nooks have been built in space that was formerly wasted and laborious work.

numerous homes and made the disposal of kitchen and miscellaneous refuse a simple matter. Old cellars have Modern incineration has decreased the fire hazard in taking the chill off a room.

NATIONAL BUILDERS CATALOG

water have displaced the steaming kettle on the stove. tractive bedrooms and bathrooms-become just as much been turned into cheerful recreation and play rooms. Hot water heaters with their continual supply of hot Dingy attics have blossomed forth with additional, ata livable part of the home as the downstairs floors.

Modernizing has brought untold comfort, immeasur-Large and small, in cities and rural districts, in towns and hamlets. To the modest home and to the stately able convenience to thousands upon thousands of homes. mansion alike. Made them better places to live in



In the "new" home shown (large picture) one can still trace a semblance of the old roof lines, but remodeled with a low sweeping curve over the entrance porch, and even such a simple change as this adds much to attractiveness.

Modernizing is almost magical in its wonderful effects—in its changing from the drab and ugly to the cheerful and beautiful. It knows practically no limitations. It is all so logical, so well founded, so practical, so easy of accomplishment.

Home owners who, before modernizing their houses, found them hard to dispose of except at a loss have been able to sell at prices far in excess of the true value of the property in its old condition, plus the cost of modernizing. Many owners who tired of the inconvenience and discomfort of the old house, found their modernized home so comfortable and attractive that they are living a new and most agreeable life in the same house but in

The stucco walls, with a half timbered treatment, and in a rich creamy buff color contrasts pleasingly and blends harmoniously with the rich color tone of the shingled roof.

More windows were added and a chimney built of brick to permit the installing of a fireplace in the living room. A new porch and entrance were arranged. The front lawn terraced and artistic flower boxes placed at the front windows downstairs.

Windows were placed to light and ventilate the attic which can later be arranged to accommodate additional rooms.

In the kitchen utility cabinets, broom closets and other features were built in. New plumbing was installed and the walls of the bathroom tiled and a medicine cabinet set in the wall.

41'0"

DINING ROOM

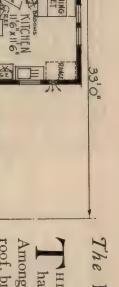
CHAMBER

PEARING BED

Electric fixtures, properly placed, bring light at the touch of a button and wall outlets permit the convenient use of the many modern electric appliances.

house (in its old dress) could only be disposed of, if at all, at a loss, the price representing lot value only. property values and making possible the sale of houses communities that have run down. new for the old, that is building up neighborhoods and growing interest in this plan which is substituting the imaginable. ern homes, more every day, old houses are being changed into mod-(modernized) at a good profit where, formerly the same entirely different and unusually pleasant surroundings The modernizing of old houses is growing. Owners and builders, too, are showing a with every convenience, every comfort That is increasing More and





The DELPHI

This handsome bungalow of unusual design has many good points to recommend it. Among its features are asphalt shingles for the roof, brick stoop, model kitchen, disappearing bed in dining room (an often appreciated convenience) delivery receptacle in back door, built-in telephone cabinet and space saving closet fixtures.



LIVING ROOM

150° × 160

View of Fireplace

306

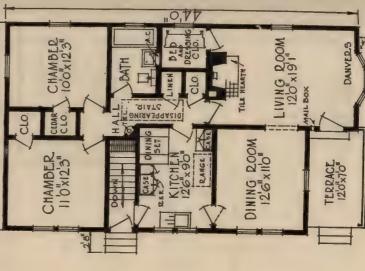


View In Rear Left Chamber

5 Rooms and Bath

S 2 The DANVE

VERY attractive bungalow or wince significate artistically enclosed with wrought iron rail-VERY attractive bungalow of white siding, its ter-The inside arrangement is splendid-model way to attic. Note the size of living and other rooms. lined closet, built-in mail box, and disappearing kitchen, concealed bed, dining nook, phone nook,





5 Rooms and Bath

The GILMER

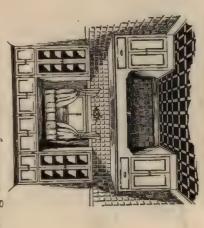
28'0"

home. The mics of the archways. Note downward and end in attractive archways. There is brick trim are harmoniously used for this The lines of roof at right and left slope a large terrace, a fireplace in living room, a kitchen with built-in features, a model bathroom with White siding and a massive chimney, with brick trim are harmoniously used for this built-in linen closet, and two large chambers. the unique treatment of the entrance. disappearing stairway leads to attic. home.

CHAMBER 12'0'XII'0"

DINING ROOM

45,0"



CHAMBER, 12'0'x 12'0"

1016

LIVING R.00M 14'6"x 13'6"

GILMER

TERRACE 13'0"x70"

Portion of kitchen showing a built-in cabinet and comfort-high sink



5 Rooms and Bath

The CADET

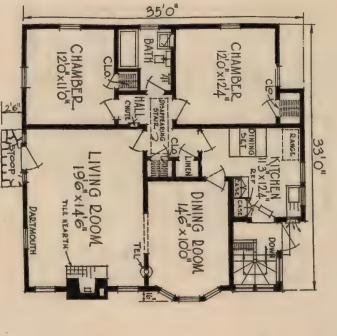
in the well planned interior, with its many built-in features. pearance. Much convenience and comfort will be found side arrangement make it a home of very distinctive apexterior. The broad, low roof lines and general out-RAMBLING type of bungalow that uses shingles for the



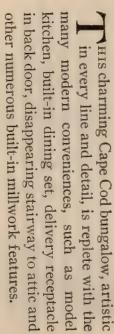


5 Rooms and Bath

The DA RIMOUTH



DINING ROOM





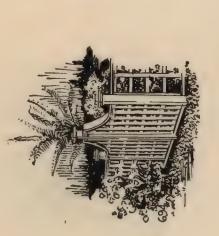
Interior View of Rear Chamber

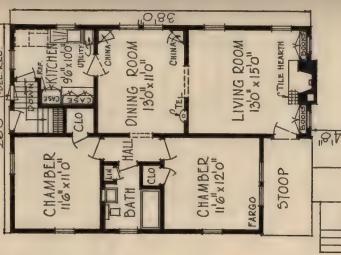


5 Rooms and Bath

The FARGO

chimney of brick and an inviting entrance. Living room has a fireplace and built-in book cabinets. Dining room has corner cabinets and a built-in telephone cabinet. Kitchen has built-in cases and delivery receptacle at rear. There are two large chambers, a bathroom, two large closets and a linen closet.



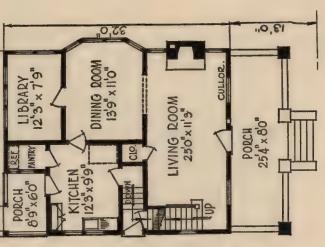


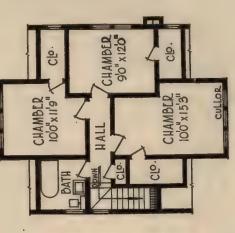


The CULLOR

6 Rooms, Bath and Library

Story and a half home that has a lot of character and living comfort. Shingles, siding and brick are combined harmoniously to create a very pleasing exterior.



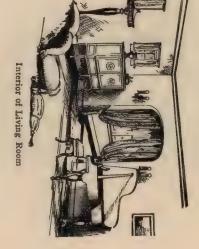




5 Rooms, Bath and Sun Room

The DEMING

An ing, the roof of asphalt shingles. A disappearing stairway gives easy access to the attic. A clothes chute, mail box, dining nook are among the many convenient built-in features.

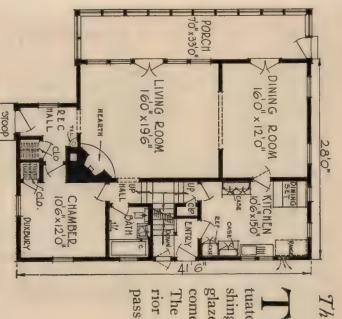


LIVING ROOM
180" x II'3"
PORCH
IO" X8'O"

NATIONAL BUILDERS CATALOG



7 Rooms, 2 Baths and Storage



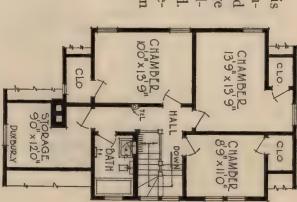
40'0"

DINING POM

CHAMBER 10'6"x11'6" CHAMBER > 100x120

The DUXBURY

The attractiveness of this home is further accentuated by the use of colored shingles for walls. The large glazed porch will be a welcome spot all the year round. The carefully planned interior is worthy of more than passing notice.

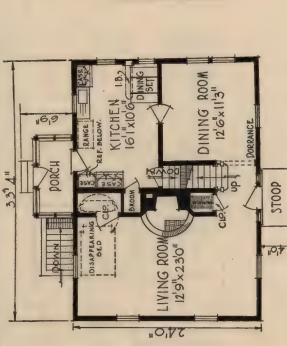




5 Rooms, Bath and Breakfast Nook

The DORRANCE

THE attractive dormers and entrance add much to the appearance of this pleasing home of shingle construction. A well laid out interior utilizes such conveniences as disappearing bed, space-saving closet features, etc. Note the well planned kitchen.



CHAMBER LIN STATE CHAMBER 12'9"x 18'0" CLP POREANCE

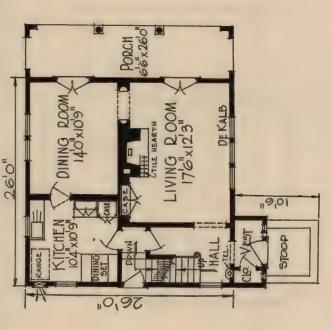
NATIONAL BUILDERS CATALOG



The DeKALB

Rooms and Bath

THE sweeping roof lines add much to the attractiveness of this home. In the well planned interior are found a model kitchen, with built-in dining set, a phone cabinet, book case and mail box. The large open porch will be much appreciated.



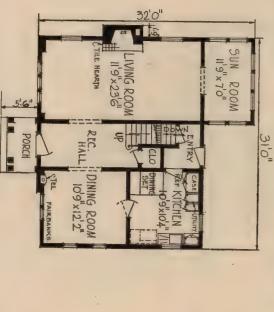




6 Rooms, Bath and Sun Room

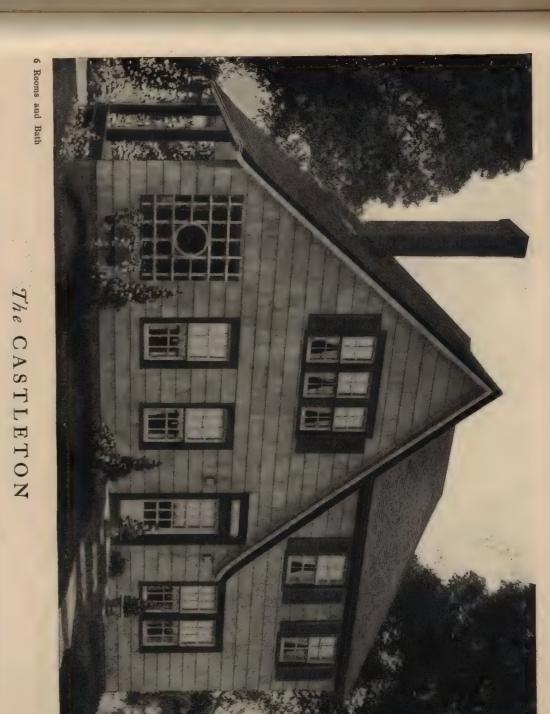
The FAIRBANKS

light, cheerful and well arranged. This home will be a pleasing addition to any locality. ing room and the kitchen is provided with built-in dining set and cabinets. Rooms are the side serves a fireplace in the living room. A telephone cabinet is built into the din-HOME of simple lines. Shingled walls are brightened by a good use of stucco and half timber at the gable and white trim at the windows. The brick chimney at

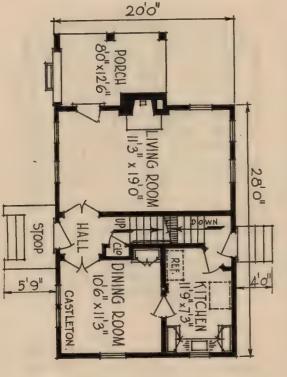




NATIONAL BUILDERS CATALOG



and there is a delightful open porch off A CLEVER interpretation of the English cottage style of architecture that combines unusual attractiveness with convenient comfort. Rooms are particularly well arranged the commodious and comfortable living room.



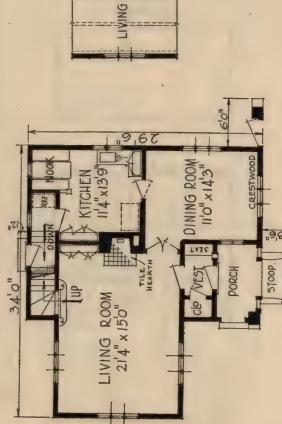


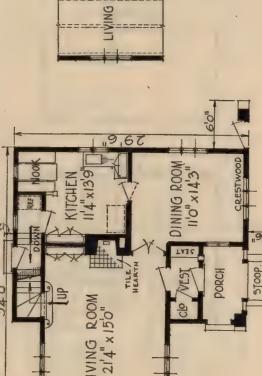


5 Rooms, Bath and Nook

The CRESTWOOD

cluding a two-story living room. Steel sash are generously used for windows and there is a built-in dining nook, mail-box and many other comfort bringing features. THE English cottage style in its fullest charm. A splendid arrangement of rooms in-





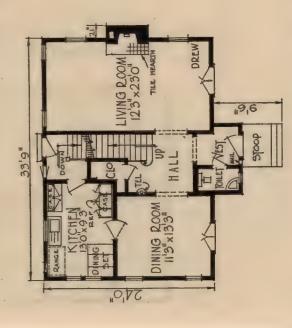
BALCONY



5 Rooms, Bath and Toilet

The DREW

TERE is a home that is unusual both inside and out. Roof is asbestos shingles in rich colorings. There is a cedar lined closet on the second floor, a toilet on first floor and many built-in features. Note splendid arrangement of chambers in second floor plan.

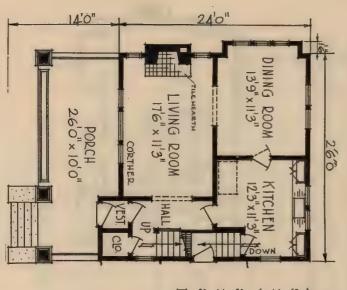




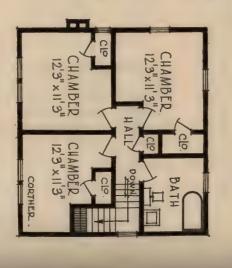


6 Rooms and Bath

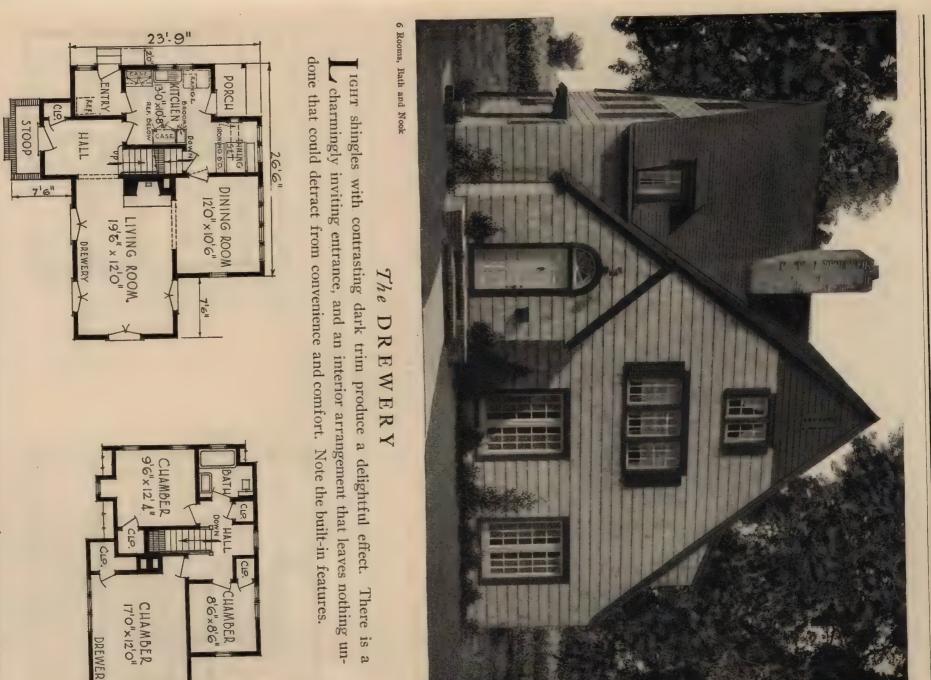
The CORTHER

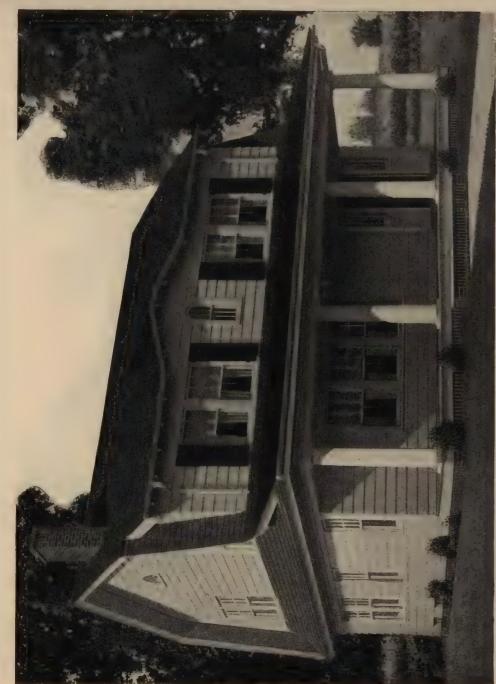


A BIRASING combination of shingles and siding for outside walls, with brick for steps and porch column foundations. There is a tile roof and a well planned interior.

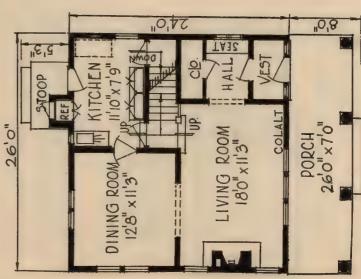


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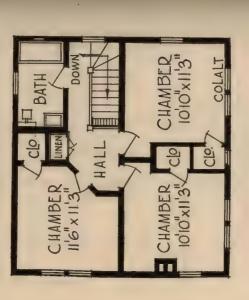


6 Rooms and Bath



COLALT

A ATTRACTIVE example of Dutch Colonial architecture ture utilizing white siding in pleasing combination with shuttered windows. There is a large open porch and a well arranged interior that is convenient and modern.

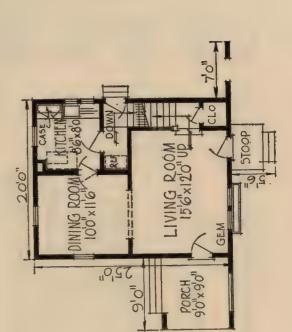


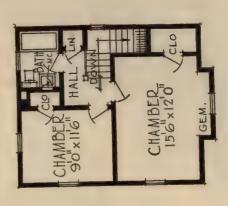
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5 Rooms and Bath

The GEM

REY SHINGLED walls and shingled roof have been trimmed pleasingly with white. The J inviting entrance and side porch both open into the living room. Cabinets are built into the kitchen. The interior arrangement is planned to secure maximum sunlight.



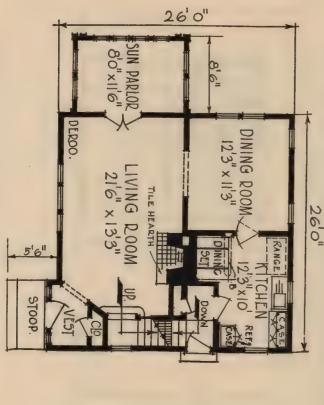




6 Rooms, Bath and Sun Parlor

The DEROO

space, the many built-in conveniences. THE arched entrance and attractive arrangement of windows makes the Deroo an unusual home. Note the splendid arrangement and size of rooms, the ample closet There is a splendid sun parlor off the living room.



CHAMBER 12'3" x 13'3" CHAMBER 14'3"×8'9 DEROO CHAMBER 89"x13'3

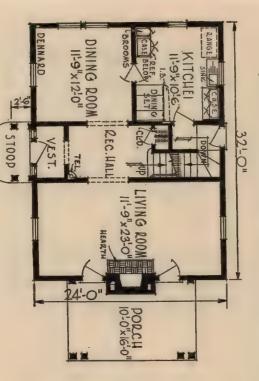
NATIONAL BUILDERS CATALOG

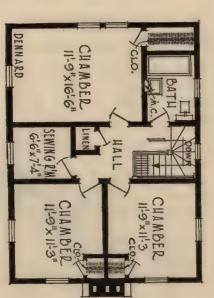


6 Rooms, Bath and Sewing Room

The D ENNARD

many built-in conveniences, including space-saving closets, dining set, phone cabinet, etc. very desirable home. Note the splendid A planned and conveniently equipped interior makes this a comfortable, attractive and SHINGLED exterior, an asbestos shingle roof in a striped design, and an unusually well living room, the inviting screened porch, the





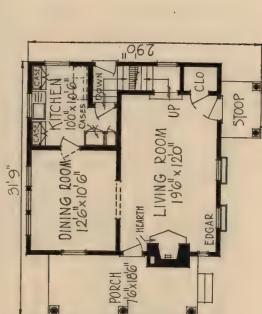
327



5 Rooms and Bath

The EDGAR

white siding. There is a large open porch at the left of the living room. There is an efficiency kitchen with built-in cabinets. Second floor provides two large chambers, a built-in case in hall, a bath and three closets. Note the convenient airing deck.



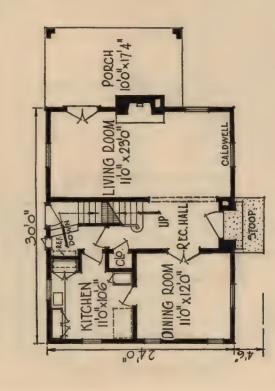


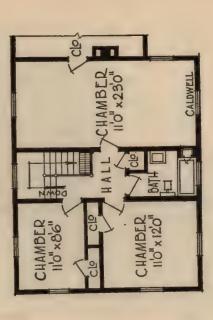


6 Rooms and Bath

The CALDWELL

ERE is a home that proves that curves or ornamentations are not always necessary to achieve architectural perfection. Note the big, roomy, comfortable screened porch, the large upstairs chambers, the splendid and convenient interior arrangement.



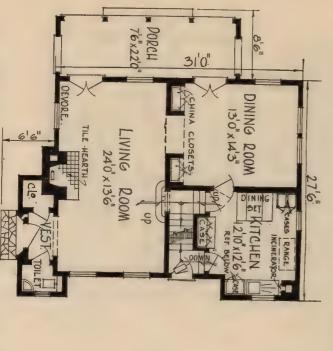




6 Rooms, Bath and Toilet

The DEVORE

RATHER unusual and very attractive treatment of the modern Colonial style. The ornamental fencing adds much to general appearance and assures strict privacy.

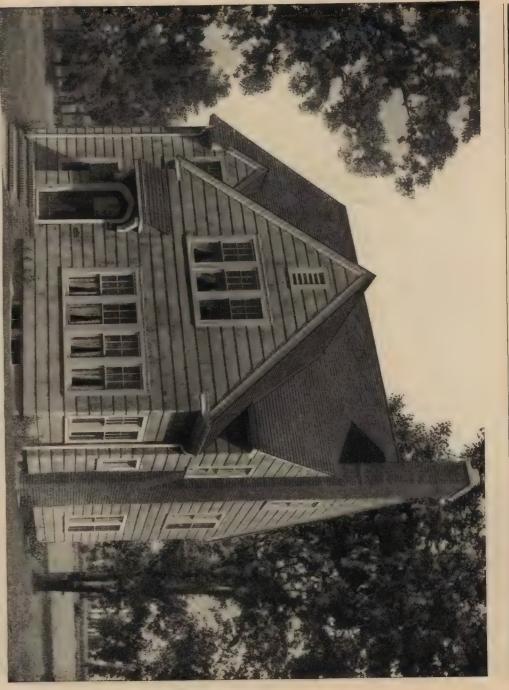


CHAMBER 12'6"x16'6"

CHAMBER 110"x136"

00

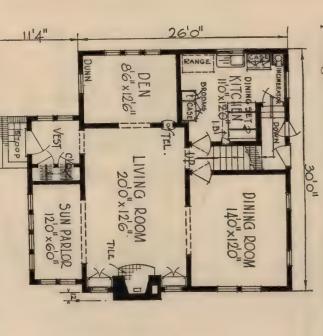
CHAMBER 11'9"x90"



The DUNN

6 Rooms, Bath, Den and Sun Parlor

passing notice because of the splendid arrangement and the many built-in features. An inexpensive and charming home that is particularly well planned inside to bring convenience and comfort in fullest measure. The plans are well worth more than



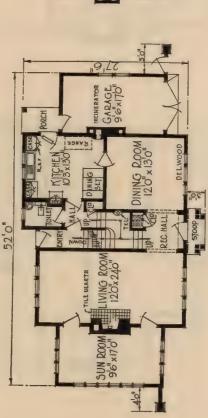




6 Rooms, Bath, Sun Room, Toilet and Garage

The DELWOOD

Ourrounded by ample lawn, this magnificent example of pure American Colonial architecture, with its built-on garage, will show to best advantage. Both floors are particularly well planned and numerous conveniences, including a built-in dining set and an incinerator are included. Do not overlook the sun room nor the toilet on first floor.



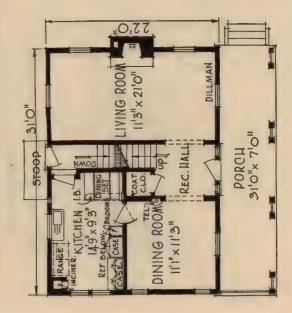




6 Rooms and Bath

The DILLMAN

THE "Dillman" is such a picturesque home that it looks like it has been lifted out of some old New York Colony. It is a home of unusual convenience and rooms are of good size and include the many built-in conveniences. Plenty of sunlight is provided.



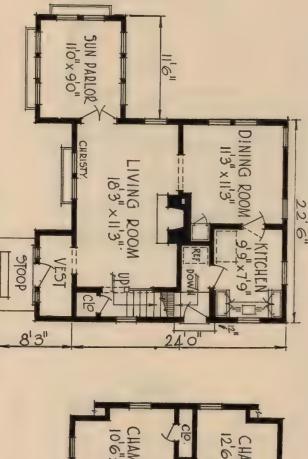




6 Rooms, Bath and Sun Parlor

The CHRISTY

looked for comfortable convenience. ICTURESQUE perhaps describes this charming home better than any other word. There is grace and beauty in every line, in every detail. And, inside, nothing has been over-Note the size of the well arranged rooms.



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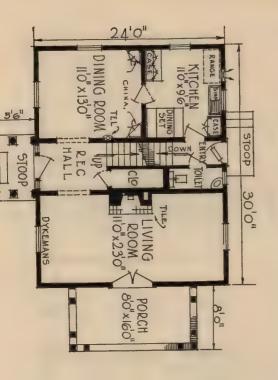


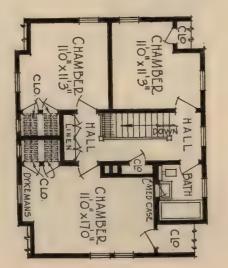


6 Rooms and Bath

The DY KEMANS

ing a delivery receptacle in back door. There is a large living room with cozy fireplace. SMALL, but splendidly proportioned dormers. Inside, there is an efficiency kitchen, with many built-in features includ-Dutch Colonial, with attractive entrance and





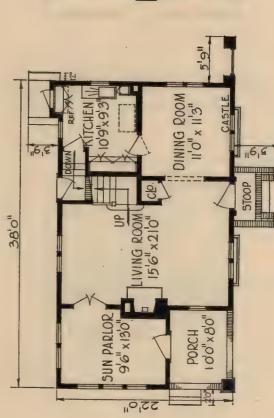
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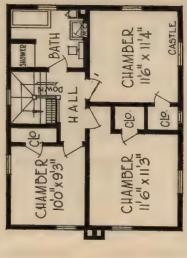


6 Rooms, Bath and Sun Parlor

The CASTLE

HOME of distinctive charm and dignity. The archway and ornamental gate at the right and the railings at lower windows give a touch of simple artistry. Rooms are large and well arranged. Upstairs there are three chambers, bath and shower.



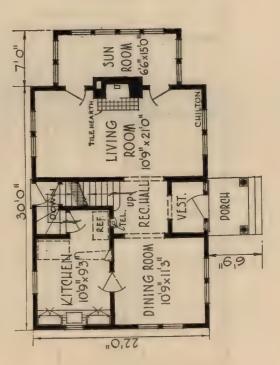


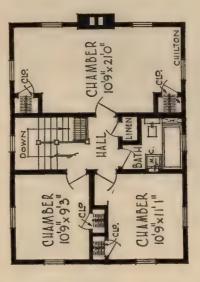


6 Rooms, Bath and Sun Room

The CHILTON

Exterior. An attractive entrance leads into a large reception hall. There is a pleasant sun room, and an exceptionally large chamber across the entire depth of the house. Closet space is ample and convenience will be found on every hand. Note large living room.



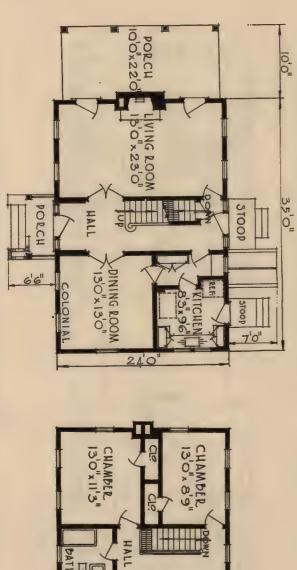




7 Rooms and Bath

The COLONIAL

A WELL windowed home is a bright, cheerful home. The green of the shutters against the white siding of exterior is peacefully pleasing. Inside, the arrangement is particularly good—assuring every convenience and much comfort. Rooms are commodious.



CHAMPER 130"x11'3"

CHAMPER 13'O"x 8'9

Two Blank Contract Forms and One Sixteen Page Classified Guide for Listing Materia
National Builders Catalog



8 Rooms, Bath and Dining Nook

The FARLEY

STUCCO and half-timbers form an interesting pattern against the shingled walls of this home. The brick chimney and the entrance with its individual roof are odd both in design and treatment. The living room has a natural fireplace with built-in bookcases on either side. Built-in kitchen conveniences, built-in cedar chest as well as dining nook and toilet on first floor are useful features of this well arranged interior.



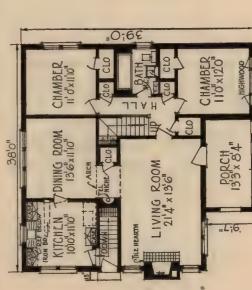


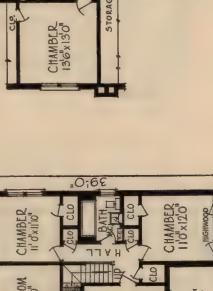


8 Rooms and 2 Baths

WOOD The HIGH

the phone niche off living room. Kitchen has built-in ironing board and utility cabinets terior. Notice the inviting porch and entrance, the large living room with tile hearth, IN THIS particularly pleasing and attractive home structural clay tile is used for the exand there are two large chambers on the first floor with a modern bathroom between. Upstairs are three large chambers and another bathroom with a built-in towel cabinet.



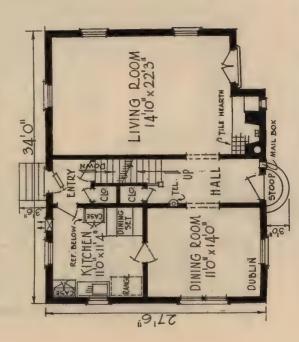


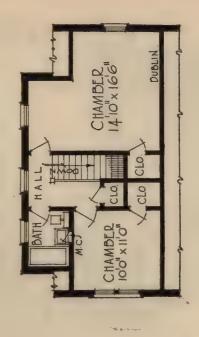
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5 Rooms and Bath

The DUBLIN

BUNGALOW of exceptional merit. Constructed of face brick. The attractive interior includes a large living room and out inc set, phone cabinet and mail box. Both floors are well planned and of commodious size.







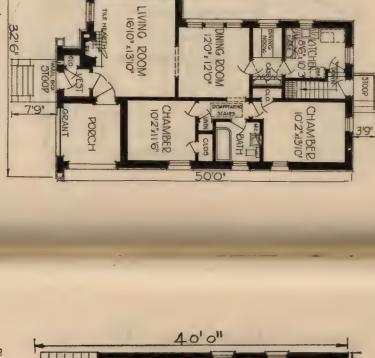
5 Rooms, Bath and Dining Nook

The GRANT

upper part of gable. There is a massive chimney and an inviting entrance. Inside rooms are comfortable and well arranged. Livlinen and clothes closets, and a disappearing stairway that affords easy access to the attic, complete this splendid arrangement. with adjoining dining nook. Two chambers, a model bathroom, ing room has tiled fireplace hearth and there is an efficiency kitchen open porch with ornamental iron railing and a balconied window in are combined to create this attractive exterior. There is an



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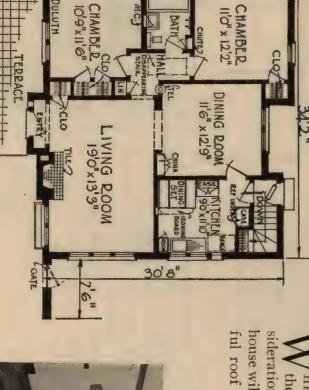


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5 Rooms and Bath

The DULUTH



ful roof is of variegated asbestos shingles. house will not deteriorate with age. The colorsideration. Built of durable face brick, this When searching for the perfect home, the Duluth deserves your careful con-

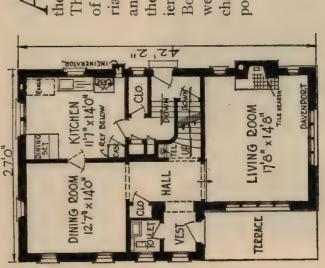


View of Living Room

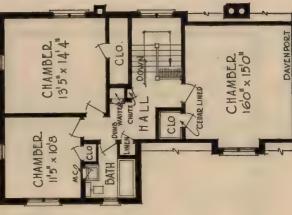


6 Rooms, Bath and Toilet

The D'AVENPORT



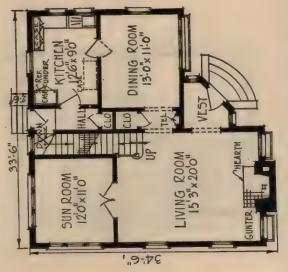
A ENGLISH home with the brick walls laid in The roof is a beautiful shade chamber occupies the front the popular skintled fashion. and dumb waiter are among and a large rial is slate. An incinerator in the plan. particularly of blue-grey and the matethe many modern convensecond floor. Both floors are iences indicated portion of the well planned,



5 Rooms, Bath and Sun Room

The GUNTER

A entrance design and outstanding chimney are distinctive. Living room fireplace, built-in telephone cabinet in passage connecting living and dining room and built-in kitchen cabinets are among the many modern features. The front gable forms the living room ceiling.



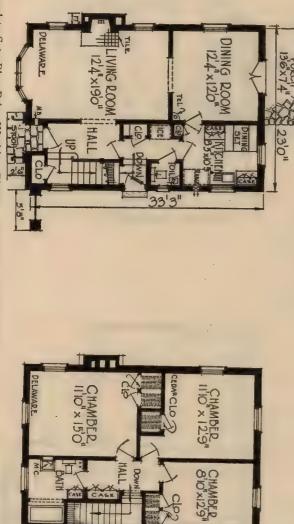




6 Rooms, Bath and Toilet

The DELAWARE

is but one detail of an exceptionally complete, thoroughly modern and convenient interior. JUILT of face brick, the stately dignity of this attractive home will grace its community for generations. The handsome bay, enchancing the beauty of the living room,



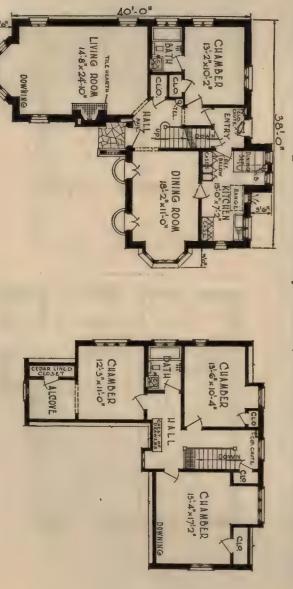
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The DOWNING

7 Rooms, 2 Baths, and Alcove

row space. Much could be said of the well-planned interior and many convenience features. Note the size of the living room with its THIS unusual home of colorful face brick, with its roof of blue-gray slate, will appear to best advantage on a corner lot. Under no circumstances should it be crowded into narbay window, the alcove with cedar-lined closet.

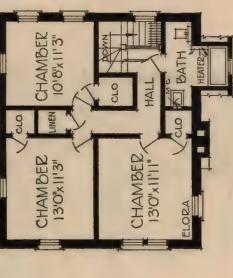


6 Rooms, Bath, Toilet and Dining Nook

The ELORA

stuccoed gable over entrance, the large porch off living room, the side entrance into kitchen. There is a dining nook between kitchen and dining room and a large broom closet. There is built-in phone cabinet and toilet on first floor. Living room is large and is provided with an attractive fireplace. Upstairs rooms are large and well arranged. Bathroom is equipped with a built-in wall heater.



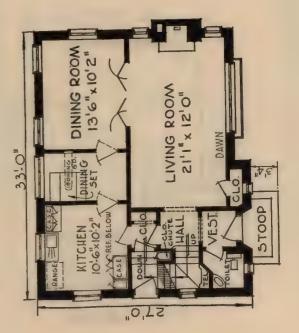


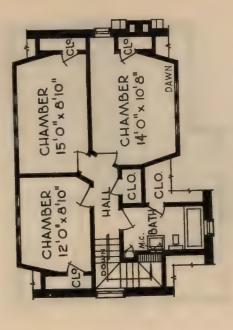


6 Rooms, Bath, Dining Nook and Toilet

The DAWN

A streature and substantially built home with solid brick outside walls and face brick for exterior surface. A generous use of steel sash throughout permits an abundance of light. The well arranged interior provides a toilet on first floor, built-in dining nook, phone cabinet and model kitchen. Three chambers and a bath upstairs.



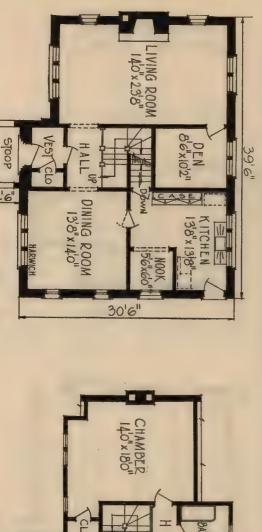




6 Rooms, Bath, Den and Dining Nook

The HARWICH

opening from the living room will be acceptable to many discriminating builders. room and a light and airy kitchen is equipped with built-in cabinets and nook. A den window groups at each side present a pleasing front. Within, a fireplace cheers the living ACE BRICK walls and shingled roof with stucco and half-timbers at the gables and dormers make up this delightful exterior. The semi-enclosed entrance and two large



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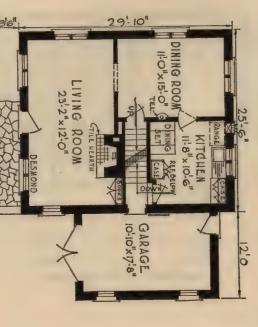




6 Rooms, Bath and Garage

The DESMOND

tures are shown on plans. ful arrangement of rooms, disappearing stairway to attic, and the many built-in fea-THE face brick is laid with unstruck mortar joints which gives an unusual, rustic effect. The stucco gable ends recall the pleasant manor houses of England. Care-Note the large size of rooms, and the built-in garage.

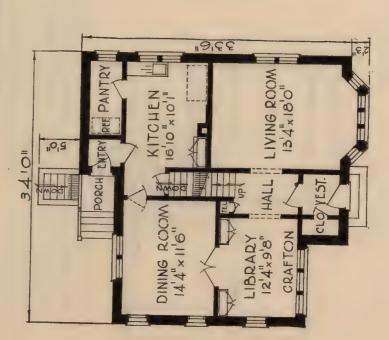




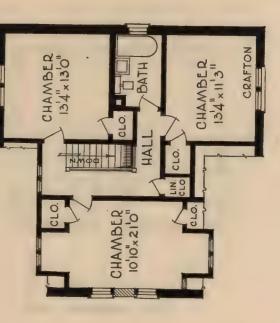


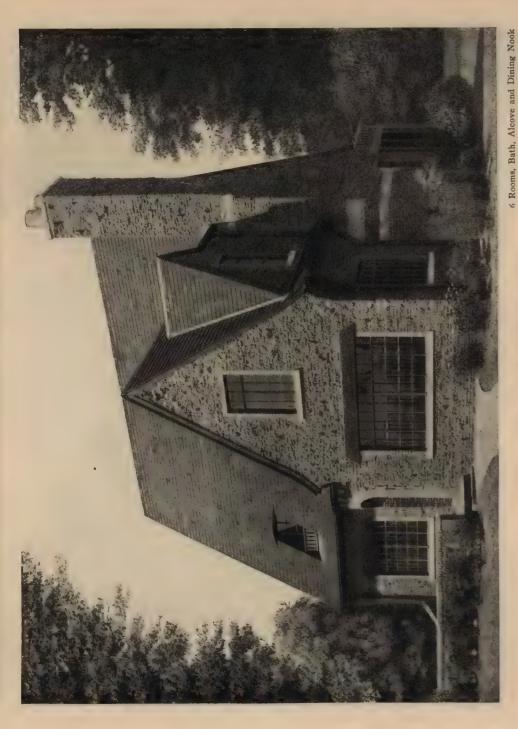
7 Rooms and Bath

The CRAFTON



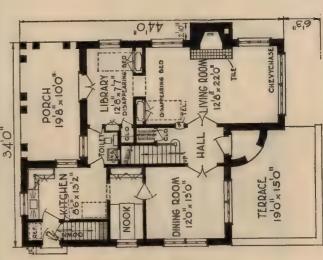
THE outside walls are common brick laid to give the skintled effect at once artistic and pleasing. Note large rooms.





The CHEVYCHASE

Ommon brick, laid in true rustic fashion, forms the outer walls of this charming old English home. Steel sash are used throughout. The well arranged interior provides for all the modern built-in features, including three convenient disappearing beds.



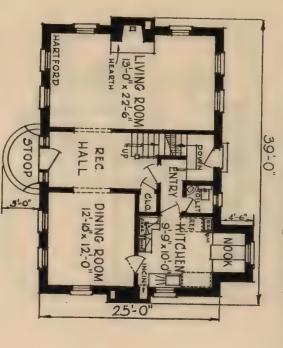




6 Rooms, Bath, Toilet and Nook

The HARTFORD

Windows, those of second floor being shuttered. Brick stoop has metal hand rail. Living room is large, with fireplace. There is a toilet on first floor. Kitchen has large dining nook, broom and utility cabinets, and incinerator. On second floor is a large chamber with fireplace, large closets, window seat, a model bath and two smaller chambers.



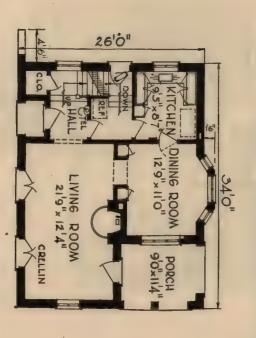
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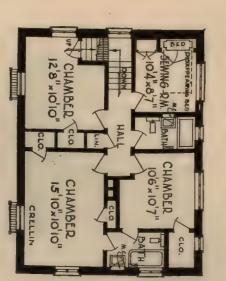
7 Rooms and 2 Baths

The CRELLIN

Shingle roof, random laid, makes an unusually effective combination. Steel sash are used throughout. The well arranged interior is supplied with all modern conveniences, including a disappearing bed in sewing room. There are three chambers and bath upstairs.



CHAMBER 12-0"x 12-6" CHAMBER 12-0"x 9-6"



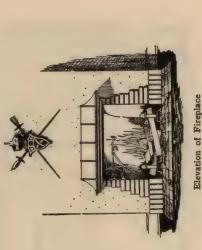


Rooms and Bath

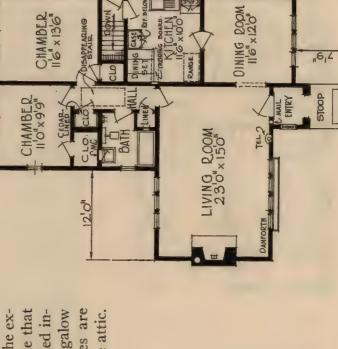
The DANFORTH

24'0"

side, quite different from the ordinary bungalow layout. Many convenient built-in features are Tucco, on patent insulated base, forms the exterior of this attractive bungalow home that will truly mellow with age. It is well planned inused. A disappearing stairway leads to the attic.



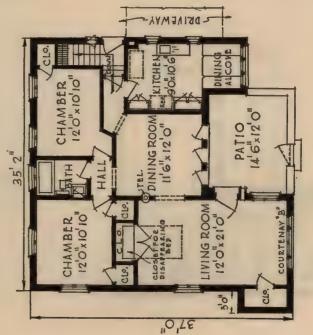
NATIONAL BUILDERS CATALOG



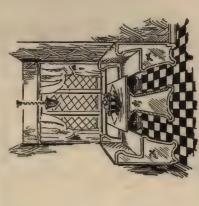


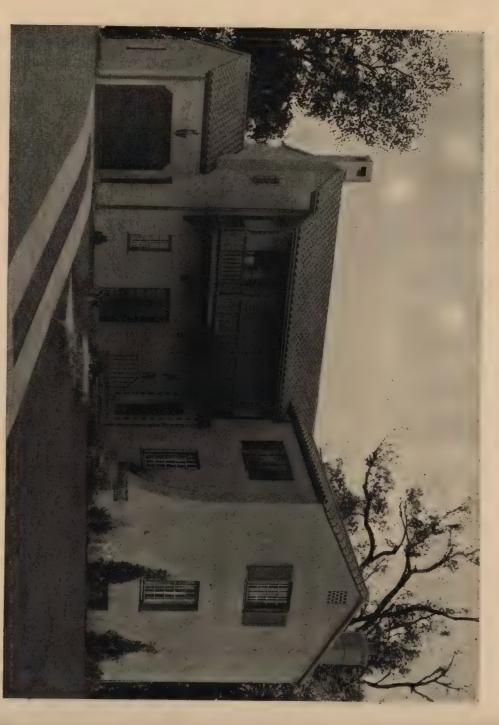
5 Rooms, Bath and Dining Alcov

The COURTENAY



A UNUSUAL bungalow with an exterior of stucco on structural clay tile. Note the splendid grouping of windows, the gated patio, the arched port cochere, and the little touches here and there that lift it far above the ordinary. A disappearing bed is among the many conveniences in the well planned interior.

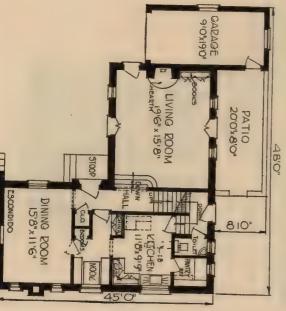




6 Rooms, Bath, Toilet, Nook, and Garage

The ESCONDIDO

a toilet on first floor. Upstairs are three chambers, bathroom and plenty of closets. place and built-in book cabinet. In the kitchen there are many built-in features. There is THIS attractive exterior is constructed of stucco on structural clay tile. Note the large balcony at second floor, the garage and tile roof. Inside is large living room with fire-

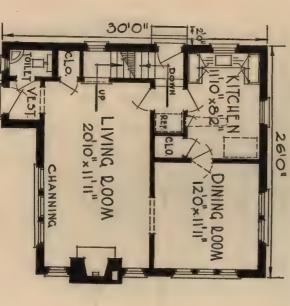


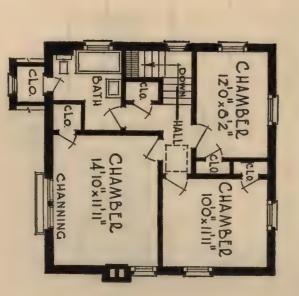


BALCONY



veniences and a first floor toilet are among the features. Rooms are large and well planned. STUCCO on cinder block forms the side walls of this attractive home that offers much internal comfort and convenience as well as exterior beauty. Built-in kitchen con-



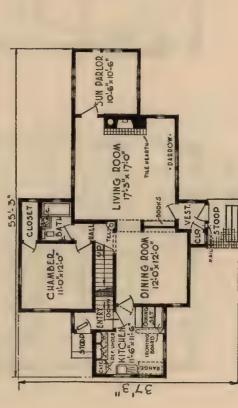


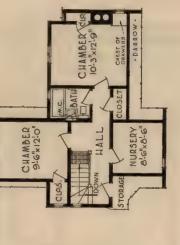


6 Rooms, 2 Baths, Sun Parlor and Nursery

The DARROW

In this home has a distinctiveness all its own. Those having a large lot will search long before finding a home that will grace it better. It is strictly up to date having such advantages as a model kitchen, delivery receptacle in rear door and a built-in mail box, dining set and telephone cabinet. The kitchen arrangement merits careful study.





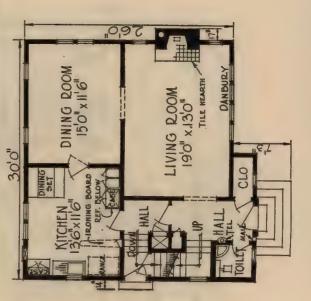
NATIONAL BUILDERS CATALOG

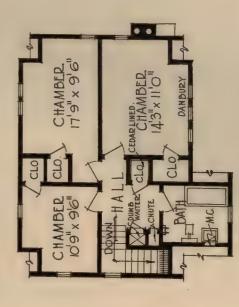


The DANBURY

6 Rooms, Batn and Toilet

attention and favorable comment. The stucco exterior is ornamented with a brick decorated entrance and step. Roof is of asphalt shingles. Inside there is a model kitchen, built-in dining set, phone cabinet and mail box, a dumb waiter, clothes chute and cedar-lined closet. All rooms are large and well arranged, with toilet on first floor.



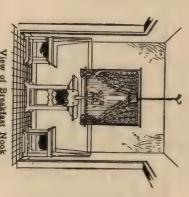




3 Rooms, Bath and Dining Nook

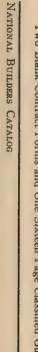
The CAYWOOD

carefully planned and includes disappearing bed, and large dining nook, space saving closets. used for windows. The three-room interior is bungalow of concrete blocks. Steel sash are THE thatched asphalt shingled roof helps to beautify this original and attractive



240"

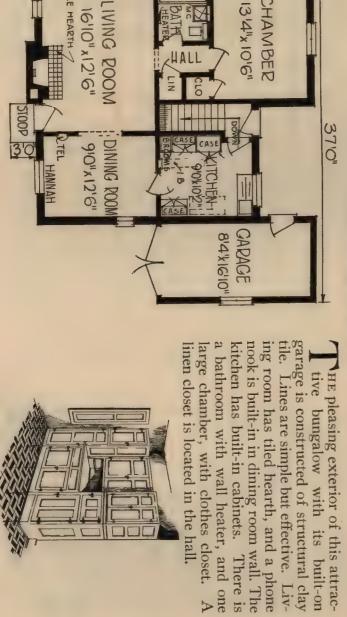
CHAMBER LIVING ROOM 18'3" x 11'11 3'9 CHAMBER 1314"x 1016"





4 Rooms, Bath and Garage

The H AZZA



A kitchen cabinet

g/i



Two Apartments



The FILBERT

S HINGLES, combined with brick at bay window and a half timbered stucco gable ior. There are two apartplanned floor including a large living room with firewith many built-in features forms this attractive exterplace, an efficiency kitchen ing room with built-in phone ments, each with a well including a dining set, dinchambers, model bath, and ample closet space are also provided. T_{W0} cabinet.

EACH FLOOR HAS 5 ROOMS AND BATH

NATIONAL BUILDERS CATALOG





The CHERENO

Two Apartments

A tractiveness D.A. Disappearing beds, adjustable ets and medicine cabinets are among the convenient arrangement of commodious closet fixtures, kitchen cabinets, linen closmany conveniences. This home is worth careful consideration both from the standpoint of a home and as an investment. rooms.

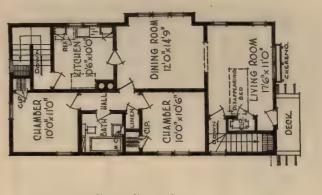
DINING ROOM

12'0"x14'9'

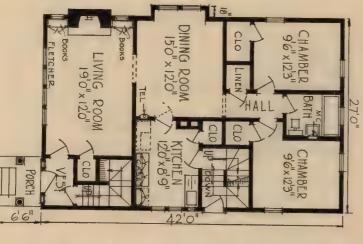
CHAMBER 10'0"x11'0"

,6,61

EACH FLOOR HAS 5 ROOMS AND BATH



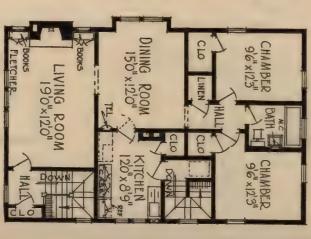




FLETCHER

are ideally located at rear of closet space. The bathrooms phone cabinets, and ample and built-in book cabinets. living rooms with fireplaces able living. Note the large house between the chambers. The model kitchens, built-in well arranged for comforttwo complete apartments, gle construction contained this attractive home of shinwould ever know that

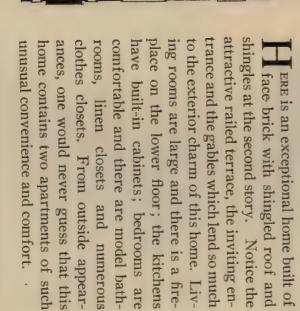
EACH FLOOR HAS 5 ROOMS AND BATH



NATIONAL BUILDERS CATALOG

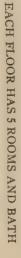


The GALLOWAY

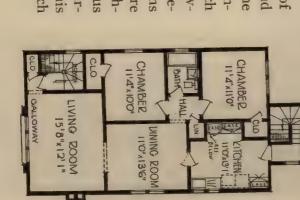


10'10"x13'6" DINING ROOM

IVING ROOM

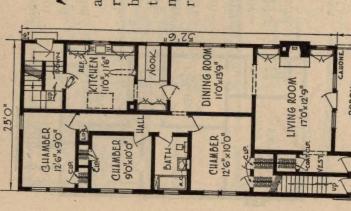


TERRACE





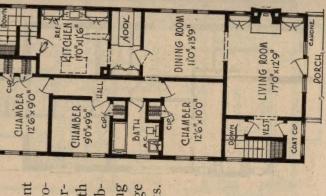
Two Apartments



HONE

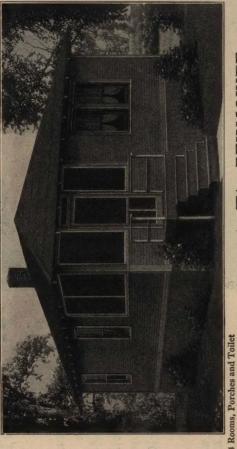
THE artistic treatment of the front makes this rather an unusual tworanged. By flanking the fireplaces with rear door package apartment home. Both floors are well arbuilt-in bookcases, a pleasing effect is obtained. Built-in features include dining medicine cabinets. nooks, ironing boards, receptacles, and metal

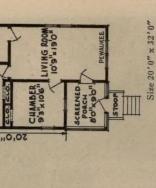
EACH FLOOR HAS 6 ROOMS AND BATH NOOK



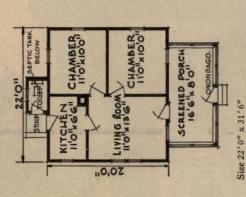
NATIONAL BUILDERS CATALOG

SUMMER CAMPS AND LODGES



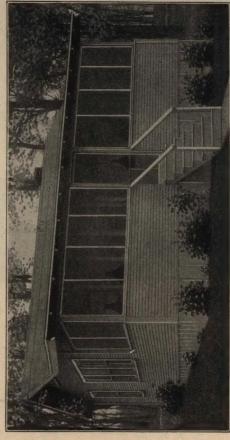


Vacation time-swimming, boating and rest in a cottage by the lake. The PEWAUKEE



The ONONDAGO

The benefits in health and happiness more than offset the moderate cost of "The Onondago."



3 Rooms and Porch

The MIAMI

Size 22'0" x 29'0"

SCREENED PORCH 22'0"x 8'0"

LIVING ROOM 22'0"x 11'6"

21,011

CHAMBER 13'0'X 9'6"

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The WESTCOTT Garage

garage for any seclusive track. An appropriate to sides on an overhead doors to swing in and slide location. Room for 2 cars. A 6-door garage with

SIZES:

The CHRYSLER Garage

only a protection but is an plenty of work space is not A well-built garage with other valuable property. Vour car needs protection as well as does

Plan No. 2 SIZES: 12' x 20'
Plan No. 2 14' x 22'





Two Complete Sets Blue-Print Working Plans With Material Bill FIVE DOLLARS

SIZES:

cars.

full protection for two hood. Plenty of room and any seclusive neighbor-

property and suitable to

A able addition to any

LA FAYETTE

Garage

